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The Question

AS TO HOW SEPTIC WAR WOUNDS SHOULD BE TREATED.

*(Being a Reply to Polemical Criticism published by Sir W. Watson Cheyne in the "British Journal of Surgery.")**

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Prefatory Remarks.

IT is a very open question whether polemical controversy is, or is not, an effective instrument for the advancement of the truth.

Of course, the man who has an open mind can always learn something from discussion. In dealing with complicated subject matters such as that of the proper treatment of wounds, trustworthy conclusions are reached only when we have been compelled to look at the facts from opposite points of view. And when in controversy one man sets up a thesis, and the next man disputes it, these conflicting suggestions may have intellectual value. They may tend to make our mental outlook less narrow, and make us balance alternatives.

But when all is said and done, only a small minority of mankind have their minds clarified by polemical controversy. The greater number come away confused and in perplexity as to where the truth lies.

And no wonder. It is difficult, even for the man who has under his hands full materials for controlling such inductions, to decide between competing generalisations; and no one, knowing of the facts only what is put before him in controversy, would be in a position to reach such a decision. Again, it is, in all ratiocination which deals with the concrete, difficult to avoid lapsing into fallacy. And in controversy this is specially difficult. For the ordinary controversialist is perpetually leading his reader into verbal snares and oratorical traps, and into all manner of logical pitfalls. But while for these reasons polemical controversy conducts into perplexity and error, this really holds only of the broader and more difficult, and not of the narrower and less difficult inductions. And when we come to definite statements concerning questions of fact, the truth or falsity of these is in the course of controversy definitely settled. Again, polemical discussion renders also other useful service. It corrects incidental misapprehensions caused by inadequacy and default in the original exposition; and it rectifies more especially those initial and fundamental misunderstandings which come from the expositor having failed to keep touch with his reader. What has generally happened in the setting out of a new generalisation is that the expositor—to keep things simple, and make a less circumscribed and less ephemeral appeal—has started off quite *de novo*, and has addressed himself to an entirely ideal type of reader. He has taken it that his readers will be of that sort that will be prepared to make a quite new start; and will have no fixed ideas to extirpate, and no cherished mental pictures to expunge. And he has further made the assumption that his readers will give to every argument its proper logical weight; will, when qualifications are attached to a statement, take close note of these; will not confuse things; and will assign to every term its precise meaning and quantitative value. Now, more often than not, exposition conducted upon the aforementioned assumptions and on general lines will not come off successfully. It will make as good as no impression upon the man who is attached to another reading of the facts, and who treasures other mental pictures. And as for the ordinary reader, exposition on general lines will at best only start him upon the road. It will not prevent his being held up by all sorts of small difficulties. And when he is held up exposition of the same kind as before will not extricate him. What he will then require is that kind of intellectual assistance that is given in private coaching.

And it is just this sort of intellectual help that controversy is competent to supply. What polemical criticism really does do is to set out the difficulties encountered by the reader who approaches the new doctrine with the conventional conceptions. And the function of the controversialist who undertakes the reply is to stand beside the reader and to explain things to him, whenever in reading a polemical criticism he is saying to himself: "Now what is the answer to that?" And this discovery of and replying to objections is indispensable to intellectual progress. In the end it is always controversy—it may be public, it may be private; it may be honest, it may be dishonest, controversy—that decides the fate of every generalisation.

But in polemical controversy we have not only a conflict between two ideas, we have also a personal contest. And intellectual progress, and in particular the advancement of logic and intellectual morality, would seem to depend upon this factor of personal contest being always present in controversy.

For the ordinary man will not, on the chance that these may possibly some day enable him to decide between competing theories, attend to facts of science that have no personal interest; nor will he, on such a chance, listen to disquisitions on logical methods and the conduct of the intellect. But he can be got to attend to every kind of fact as soon as an important principle of practice, and the issue of a personal contest comes to turn upon it; and, given these conditions, every man will quite gladly consider points of logic and intellectual morality. That is as much as to say: Controversy gives to every matter that comes into its orbit a vivifying personal interest, and in particular it makes of logic and intellectual ethics really live issues. It brings home to the mind that it really is desperately difficult in all ratiocination that deals with the concrete, to reason rightly. It shows up the confusion that results from using ambiguous and non-quantified terms; exposes loose and fallacious methods of proof which have got themselves accepted; shows that we ought to give consideration not only to familiar and acceptable, but also to unfamiliar and unacceptable, explanations; and makes apparent the moral danger of cherishing one's mental pictures till they turn into obsessions. And were it not for the interest that attaches to personal combat, I cannot think that any of these things—and they are the rules and ethics of the intellectual game—could ever be instilled into the ordinary man.

Moreover, the fact that thereby not ideas only, but men also, are adjudicated upon makes of controversy something more than a mere educational instrument; it also makes it an instrument of direct social service. When one reflects that it is public reputation that designates a man for office where he influences important action, and that it is popular estimation which gives driving force to a man's words, one sees that there is wanted some court of appeal to which popular estimates could be brought for revision, and some sort of machinery for settling whether this or that man who is trusted by the lay or professional public possesses the only kind of ability worth having—the gift of getting at the truth.

Now, we have in point of fact in polemical controversy a machinery for settling this. While, as we have seen, controversy can never enable a man who is out of touch with the facts to decide between competing doctrines, it does give to every reader data by which he can adjudicate between the men who are disputing about those doctrines. It does show whether the disputants are competent, or incompetent; logical, or illogical; *honest*—eschewing fallacious arguments, and giving way if they can no longer conscientiously hold their ground, or *intellectually dishonest and immoral*—trying, when things go against them, to make the worse appear the better reason; and resolutely holding out even when cumulative evidence piles up against them. And what is really wrong with the world is that, through reluctance to involve ourselves in controversy, and fear of offending public sentiment (which is want of moral courage), we allow many a man who has neither a gift for getting at the truth, nor yet (in my meaning of the word) intellectual honesty, to continue in undisturbed enjoyment of reputation and authority.

Now this, of course, runs counter to what is generally accepted. You hear everywhere that the personal element is the unethical element in every controversy. And the

* This article reached us through official sources. We comment elsewhere upon the preamble.

cynic will confide to you that polemical controversy is always a personal vendetta. And this is the point of view from which controversy is judged. Whenever the question is raised as to whether it was, or was not, justifiable to have said this or that in controversy, your man of the world goes and turns up the previous papers to see what amount of provocation was given, and what reprisals it was legitimate to take. In other words, to the man of the world the whole thing is a question of retaliation; and justification is to him a question of provocation given. But, after all, polemical controversy is not on exactly the same ethical plane as the duel and vendetta; and its psychology is a little different. In the duel or vendetta there is always a personal and private issue, and only that. In controversy, though the private motive does often come in, there is always a matter of public concern—the question as to whether this or that generalisation should be accepted. And while in polemical controversy there is, as in the vendetta, always a joy of battle—a satisfaction when you get your shots in straight—you do not in reputable controversy, any more than in actual warfare, derive satisfaction from wounds inflicted. You need not even be insensible.

But as soon as this possibility is hinted at, down there comes upon you the pacifist with his humanitarian proposals. And the sort of thing he says to you is this:—"If you—the controversialist—are really not out for your pound of flesh, if what you want is to advance your cause, to smooth the way for the acceptance of your doctrine, and to prevent truth being obscured by false reasoning and intellectual immorality, then you could achieve all you want without hurting any individual. Whatever you have got to say, you can say impersonally. Or, if you really must have someone to attack, you could at any rate get rid of all that objectionable personal sting by attacking, instead of some unfortunate individual, the group or body corporate to which your particular antagonist belongs."

The real answer to this sort of humanitarian appeal is that it takes singularly little account of what I have referred to under the heading of direct social service; and it proceeds upon fundamental misconceptions. It bases itself upon the—in exposition admissible, in controversy inadmissible—false assumption that your reader has no *parti pris;* that he is governed entirely by intellect; that he is with respect to competing theories and disputants completely neutral, and had as lief attach himself to the one doctrine and the one disputant as the other. In other words, what you are asked to believe is that by pacific processes you can win all intellectual victories, and that you will in controversy get everyone over to your side if you point out, without censure, and quite quietly, mistakes in fact and reasoning committed on the other side. But the brutal fact remains. All controversy is a warfare from which the one or the other of the parties has got to emerge discredited. And it is the task of every disputant to minish the prestige of the protagonist on the other side; and also, if possible, to bring home to the reader that he is, when reading the author he favours, as liable to be led away into fallacy as is a man listening to an advocate setting out his cause.

But the pacifist still sees an opening left for his humanitarian intervention. It would still, so he thinks, be possible to attenuate the personal sting that controversy leaves by diverting the attack from the individual to the class to which he belongs. *Prima facie* there would appear to be logical point and also justice in this proposal. For behind the man who is proceeded against, there are always others who share his views. And in such a case equity would seem to require that the indictment should issue not against the individual but against the group.

But the moment we begin to think, things always look differently. One discovers that it would be almost impossible to frame an indictment which could equitably be brought against an entire group, let alone against a body corporate. For though men may hold a doctrine in common, you find, as soon as you come to investigate, that each holds it with a difference.

And again, as soon as one thinks it over, one realises that there are two distinct types of controversial writing. In the one the materials upon which the inductions rest are revised, new data being brought forward, and data which ought never to have been accepted being discarded; also fallacies are exposed; issues which have been tangled up together are unravelled; and throughout the prescriptions of logic and intellectual morality are observed. In critical comment of this kind everyone, of no matter what school of thought, will gladly be a partner. But there is also polemical writing with which no one would willingly be associated. No one wants to be associated with controversial writing which takes its stand upon erroneous data; which, no matter how intricate the facts, tells you that they can be construed in only one way; which then introduces confusion by using undefined and ambiguous terms, tangles up together issues which are logically distinct, and shows an intention to hold out everywhere against no matter what pressure of cumulative evidence. Again, no one wants to have anything to do with endeavours to knock out a controversial antagonist by depreciatory comment directed to things quite foreign to the issue under discussion; nor yet to associate himself with the unjust criticisms with which a man will relieve his feelings when he finds problems he had comfortably settled reopened, and sees, where he before saw a limit to his work, fresh complications introduced, and more labour and more thinking piled upon him. Now we have in most controversial writing critical commentary of each kind: on the one hand, comment which all the clear and honest minds on either side would accept; on the other hand, comment which the writer's partisans would unanimously wish to disown; and again comment which some of these partisans would approve, and others not approve. And, carrying into actual practice the pacifist's injunctions would mean ignoring in controversy everything one's antagonist's partisans might wish ignored. But whosoever followed this counsel would place himself in an altogether false position. He would lay himself open to the charge of ignoring in criticism directed against himself all that was specially difficult to answer. And the controversialist who was thus edited would feel that his criticism was being bowdlerised of its best and most effective points. At the same time the controversialist, who under a self-denying ordinance overlooked in his opponent's writings all that that opponent's partisans would themselves have eliminated, would be bound to feel that he had weakened his own case quite unfairly. For, of course, in his view the passages in question would be just those which showed the desperate straits into which the defence of an erroneous generalisation conducts. And finally the reader also would be ill-satisfied. If a partisan, he would be sure to think that his cause and his protagonist had been prejudiced. And if simply an ordinary reader, he would be sure to feel that, with everything watered down and everything personal eliminated, he was getting absolutely no fun, and correspondingly little use out of the discussion; and, above all, that no light was being shed upon the capacities and moral characters of those who aspired to be his intellectual guides.

But to go into all this is perhaps to attach undue intellectual importance to the suggestion that controversialists should be sheltered from the consequences of their own action. And it is really beyond question that the only proper way of conducting controversy is to hold every man responsible for everything that appears over his signature, and nobody else responsible.

I have now set out the aims and ethics of polemical controversy as I see them, and though I full well know that no doctrine is on a safe foundation and no ethical principles have binding force until many thinking minds have accepted them, yet I feel with regard to what has been enunciated above, so sure of that acceptance, that I pass straightway to translate precept into practice. In making my reply to Sir W. Watson Cheyne I propose to be mindful of all the issues pointed out in this preface; and I shall venture also to ask of the censors of controversy that they shall not forget them.

Questions at Issue between Sir W. Watson Cheyne and Myself.

Let me begin by formulating what is at issue between Sir W. Watson Cheyne and myself.

It is not, as a certain tone of exasperation in his writing might suggest, a question of his being at variance with me on every point; of his wishing every wound to be treated with antiseptics right through from beginning to end; and of my holding every application of antiseptics to be prejudicial.

Quite the contrary.

Sir W. Watson Cheyne's dicta with regard to antiseptic treatment are as follows:—

(*a*) "After *8 to 12 hours*[1] the chances of success are comparatively slight."[2]

(*b*) "Antiseptics used at a later period may seriously interfere with the protective granulation wall, produce a weak spot, and thus open a way to a general infection, or at least to a considerable local extension of the disease."

And again:—

(*c*) "Hence I am very chary indeed as to the use of antiseptics in suppurating wounds .....; in fact, I never try to disinfect such wounds."

It will be seen that Sir W. Watson Cheyne is very far from being an advocate of that indiscriminate antiseptic treatment which was in vogue in the earlier period of the war. What he advocates is that antiseptics should be applied at the outset, and that they should then be applied in a very thorough manner.

When the time for that prophylactic disinfection has gone by, or when the attempt to disinfect has been made and has failed, that is, so far as I can discern, the end of Sir W. Watson Cheyne's programme. His attitude is, I think, this: "I have opened up the wound; I have provided mechanical drainage; and the wound is being washed out with weak antiseptics; and it is being dressed; I do not see that I am required to think out the problem any further."

On this point and on the question of the possibility of sterilising war wounds at the outset, I have ventured to take up a position diametrically opposite to that of Sir W. Watson Cheyne.

In respect to the sterilisation of war wounds at the outset I am, in common with everyone who has experience of wounds in France, and certainly with every bacteriologist who has investigated the matter, persuaded that severe war wounds have never yet been sterilised; and, moreover, I am, in common with, I think, everyone who has seriously studied such wounds, convinced that from the nature of the case they cannot be sterilised by any antiseptic.

On the issue as to how septic wounds should be treated I have contended that we can by what I have called *physiological methods*[3]—i.e., by inducing in the wound the appropriate physiological reactions—help the body to combat the bacterial infection. By inducing a flow of lymph we can bring the blood-fluids into operation in the infected tissues and the wound cavity. By liberating trypsin from the leucocytes and turning this to account we can get rid of the sloughs. By the same agency we can resolve infiltration. And by bringing to bear always fresh serum, and inducing leucocytic emigration we can promote the destruction of the infecting microbes—beginning with those in the deeper tissues, and ending up with those on the surface and in the cavity of the wound.

And there is also this further issue between Sir W. Watson Cheyne and myself. It is one of the underlying assumptions of his paper that wounds come into treatment practically immediately, and are then continuously cared for in hospital. But the outstanding fact in this war is that it is often many hours, and sometimes instead of hours it may be days, before the wounded are got in from the field into an operating hospital; and that it is, when casualties are heavy, inevitable to postpone much of the extraction of projectiles and foreign bodies and the adequate opening up and draining of wounds until the men arrive at the Base. And when all this initial work has been completed the conditions are not such as to permit of the further treatment being carried out uninterruptedly. If at the Front the men must be sent to the hospitals at the Base; and, if at the Base they must be sent overseas, and often to long distances after landing; and, finally after a convoy has arrived, it takes quite a long time before all the examinations are complete and treatment is recommenced. So that in the case of the wounded in war, in contradistinction to what obtains in time of peace in accidents, adequate treatment is by necessity very often belated; and there are also comparatively long periods in which treatment is compulsorily suspended. And this is the fact to focus attention upon. For it is what happens in the wounds in the periods when they go untreated that makes for disaster. The lymph-flow stanches; the exposed surfaces desiccate; the sloughs provide a nidus in which, and under which, all manner of microbes, and among these tetanus bacilli, may shelter themselves; and then not only the streptococci—to which the organism offers little resistance but also the bacilli of gas phlegmon, microbes which encounter in the normal organism very formidable resistance—make their way into the tissues, producing cellulitis or gas-gangrene and afterwards blood infections. All this is the direct result of the deterioration in the physiological conditions. And looked at from the point of view of treatment, this deterioration is the central element in the situation. It increases a hundredfold the difficulties which stand in the way of a successful application of antiseptics. And I cannot but believe that it calls aloud for rectification—and I would add prevention—by physiological treatment. To this whole problem Sir W. Watson Cheyne is, as it seems to me, blind. "He has not seen the City we seek; not even sighted its tower from afar."

Let me deal first with what Sir W. Watson Cheyne has to say on sterilisation of the wound at the outset.

I. Issue as to whether the Wound can at the Outset be Sterilised by the Application of Antiseptics.

We may discuss here first the *a priori* considerations, in other words those which are based upon anatomical, physiological, and bacteriological study of the wound; and upon an examination of the behaviour of antiseptics.

A priori Considerations which bear on the Practicability of Disinfecting the Wound at the Outset.

Sir W. Watson Cheyne has a mental picture of the distribution of microbes in war wounds and of the sequence of events in war wounds which is quite congenial to the view that it is feasible to sterilise these.

He tells us, not distinguishing here between war wounds inflicted by projectiles and infected wounds met with in civil practice:—

(*a*) "Now we may meet with these infected wounds under two conditions: (1) At or soon after their infliction, and before granulation or suppuration has occurred; and (2) at a later date, after the establishment of granulation or suppuration."

(*b*) "During the first stage, which lasts from two to three days, the bacteria, *at first free in the wound*, penetrate into the tissues."

(*c*) "Now during the early stage the bacteria are fairly accessible to the action of destructive agents introduced into the wound; they *are not deeply imbedded into the tissues* nor surrounded by dense masses of cells."

(*d*) "In the later stage, however, the organisms are lying in the granulation tissue, more or less protected from the destructive action of antiseptics."

The reader will, as soon as his attention is drawn to the matter, see that all this assumes that the infected wound we have to deal with is a cavity, and a cavity with microbes implanted only superficially upon its walls. But often we have what may be called "hammered in wounds"—i.e., wounds in which the missiles, whether shrapnel bullets, or shell fragments, or detached portions of bone, or pieces of accoutrement or clothing are impacted into the tissues. And here the microbes are not lying in any wound cavity. Again, with a definite wound cavity, we have extensive laceration and hernia of muscle, and where a bone is struck extensive splintering, with the result that many of the microbes are buried in pockets and crevices, while others have by the explosive force of the impact been carried far into the tissues.

Now quite obviously all these buried microbes are inaccessible to antiseptics.

A further point also deserves consideration. Those microbes which may be lying upon the face of the wound will, when lymph has exuded and has dried or coagulated, be buried under scab or fibrin. And these become incorporated in the tissues much in the same way as particles deposited upon the barked surface of a tree become buried in congealed sap or resin.

It does not appear that Sir W. Watson Cheyne has ever perceived any of these things. He sees in the wound nothing but the wound cavity. But the wound is not the wound cavity. It is in reality the infected walls that encase it.

Penetrating Power of Antiseptics.

This leads directly on to the question of the penetrating power of antiseptics. For if antiseptics are to sterilise the wound it will not suffice to insert them into the wound

[1] Here and elsewhere, unless the contrary is stated, the italics employed in citations from Sir W. Watson Cheyne are my italics.

[2] Sir W. Watson Cheyne, however, hopes that, with a proper selection of antiseptics, the period of grace for the application of these may be extended.

[3] THE LANCET, June 17th, 1916, p. 1203.

cavity. They will have to travel up from the embouchure of the wound into the head waters; and to gain access to the tributaries and creeks; and they will have to penetrate everywhere deeply into the banks.

Now we have no antiseptics which can do this. And to find one which would be capable of doing it we should have to discover a substance which was very soluble in water, and with this, of course, was very diffusible; and which would instead of combining indiscriminately with all albuminous substances, combine differentially with those which are contained in bacterial protoplasm.

And, moreover, this substance would have to be so indifferent to ordinary albumens as to remain chemically active not only when, as in the cavity of the wound, we can bring an indefinitely large quantum of antiseptic to bear upon a limited quantum of albumen; but also when we bring into operation instead of a *full body* of antiseptic only that *emanation* which diffuses out from it; and when we exact—as we do when we demand penetrative power—of this "antiseptic emanation" that it should penetrate into and do its work in quite overwhelming quantities of albumen.

To appreciate how utterly the capacities of our present antiseptics are outstripped by these requirements, it will be well to keep before the mind the plain fact that it is practically impossible to mix into pus enough antiseptic to sterilise it. Now, if antiseptics in full body cannot accomplish this, how much less can we ask of an antiseptic emanation that it should make its way up through the albuminous medium which fills in the channel of the wound and penetrate into tissues full of albuminous fluid or of albuminous fluid and leucocytes.

What really happens when an antiseptic and an albuminous medium are brought into contact without mixture is, as experiment shows, that the antiseptic is held back at the delimiting border instead of penetrating the contiguous albuminous fluid, as would happen if this were an indifferent menstruum. In correlation with this, when an albuminous fluid implanted with bacteria is superposed upon an antiseptic, agar being added to each to prevent direct mechanical mixture, the microbic colonies in my experience always develop right down to the confines of the antiseptic.

I would suggest to Sir W. Watson Cheyne that he should have experiments of this sort carried out for him, and that he should take cognizance of the results. One asks oneself whether he would then still be positive that he and his collaborators have "amply proved" that antiseptics diffuse through the very densest albuminous media (blood clot and muscle) and kill microbes in a comparatively short time at a considerable distance from the original deposit; and whether he would still valiantly assert: "These facts are absolutely proved, and cannot truthfully be denied."

Penetrating Power into Living Tissues.

But Sir W. Watson Cheyne does not stop short here. He goes on: "Not only do antiseptics diffuse through dead or inert tissues; they also penetrate into the living tissues." And then bethinking himself that this ought to be established experimentally he proceeds to cite two experiments, prefacing them and completing them with a scientific commentary of this kind:—

(*a*) "I admit that until recently this was only deduction on my part from several observations and from clinical results."
(*b*) "We are now investigating the facts of the matter."
(*c*) "It is by no means easy to devise experiments which will satisfactorily test the question."
(*d*) "But I may mention two preliminary trials which Mr. Edmunds made before he left Chatham."

And after narrating these experiments[4] Sir W. Watson Cheyne clenches his argument by saying:—

(*e*) "As a matter of fact, such experiments are hardly necessary; for we know from clinical experience how readily chemical substances are absorbed from wounds."

None the less, it will be profitable to examine the experiments. They are on the same intellectual plane as the comment.

In each case a guinea-pig was anæsthetised. The gluteal muscles were then incised; borsal was introduced; and the wound was stitched up. Then after a certain interval the animal was killed; the block of muscle was excised; this was placed with the superficial aspect downwards on a freezing microtome; and sections were made until the floor of the wound was reached—each section being separately tested with ferric chloride for the presence of salicylic acid.

In the sections from the first guinea-pig no salicylic acid was discoverable; but the urine from the bladder gave the ferric chloride reaction.

In the case of the second guinea-pig the 28 sections obtained immediately before the floor of the wound was reached—corresponding, we are told, to 2·8 mm. of tissue—gave the reaction with ferric chloride; and here again the urine was charged with salicylic acid.

When we are set down only to such a halfpenny-worth of bread it might seem labour lost to inquire into its nutritive value. But such inquiry may have indirect advantage by showing us one of those grosser respects in which Sir W. Watson Cheyne, as a scientific worker, comes short. It ought to have occurred to him that his unembedded block of excised muscle may have failed to keep shape upon the plate of his freezing microtome, and that as the freezing propagated itself in the block the salicylic acid may have been carried forward—i.e., that it may have been forcibly driven from the floor of the wound into the tissues. Again, it ought to have occurred to him that salicylic acid may, as we see in connexion with salicylic ointments, eat into the tissues, and that he may have been registering results obtained with necrotic instead of living tissues. And Sir W. Watson Cheyne ought to have appreciated that his method of testing does not distinguish between salicylic acid in the tissues and salicylic acid in the blood-vessels.

But what is in these experiments a very real trial to the reader's patience is that their author should have so scamped the thinking part of his work as to have failed to perceive that *absorption into the blood* and *penetration* are two quite different things. For if absorption into the blood was to be taken as evidence of penetration it would have been more intelligent, in lieu of undertaking a set surgical operation, to have given a hypodermic injection; and Sir W. Watson Cheyne might then, instead of cautiously writing, "Such experiments are *hardly necessary*, for we know from clinical experience how readily chemical substances are absorbed from wounds," have adventured boldly to say, "Experiments such as I have done are simply waste of time, for everybody knows that chemical substances are absorbed when given by hypodermic injection."

In brief, one perceives that if Sir W. Watson Cheyne had given a little more thought to his work he would, instead of seeing in absorption into the blood a proof of penetration, have recognised that this is just one of those factors which stands in the way of effective penetration and sterilisation of living tissues by antiseptics.

Summary of Experimental Evidence adduced by Sir W. Watson Cheyne.

It is in point of fact—I take my courage in both hands in saying this—quite unprofitable to follow Sir W. Watson Cheyne any further in any matter where experimental work in the laboratory or deductions from experimental work are in question. But let me hasten to put myself right with my reader by assuring him that not more than any other man do I hold myself entitled to dismiss curtly experimental work and conclusions with which I am in disagreement without at the same time bringing proof to show that their author is in matters of the laboratory an amateur.

Let me therefore set to work to justify what I have said. Let me begin with Sir W. Watson Cheyne's announcement of his discovery of an important generalisation in connexion with antiseptics.

"Another point, which I confess had not occurred to me until I came across it in the course of my experiments, is also of importance—viz., that the antiseptic is used up in killing bacteria."

It will be seen that we have here a generalisation which ranks in the order of obviousness with the adage that "you cannot both eat your cake and have it"; and with the scientific platitude that you cannot carry out a chemical operation without expending chemicals.

We may take next the announcement of a colleague's device for obtaining a cell of measured depth—the device being that of taking a metal ring, placing it upon a sheet of glass, and superimposing upon it another similar sheet.

"This difficulty (i.e., the difficulty of obtaining the proper depth of agar) has been overcome in a very ingenious manner, and though when two or more men work together it is not usual to refer to any one man's share in particular, still ..... I think I ought to say that it was devised by Mr. Edmunds, and I shall speak of it as Edmunds' cell."

Some day we shall be told that the difficulty of carrying sugar into one's tea has been overcome in a very ingenious manner by the device of sugar-tongs, and that in connexion with it this or that reinventor's name ought to go down to posterity.

[4] To these is added by way of a postscript, and in a footnote, another experiment.

Next we may take this fiction.

"Lister observed the very curious phenomenon that if blood were drawn aseptically into a glass flask which had been sterilised by heat the clot which formed did not contract and squeeze out serum, as is the case when blood is received into an ordinary non-sterilised glass vessel."

"I fancy bacteriologists are not familiar with this fact; otherwise they would not," &c., &c.

Everyone who has drawn blood into a sterile syringe, and, of course, every laboratory worker, knows that this is fiction. Let me tell Sir Watson Cheyne that the method of serum therapy, and indeed the whole serum industry, depends upon the fact that blood when drawn into a vessel which has been sterilised by heat *does* contract and squeeze out serum.

So far my task of criticism has been simple as child's play. For we have up to this remained entirely in the domain of the particular and the concrete, referring our author's utterances to the touchstone of fact. Let us now, rising to a more abstract and general point of view, deal with those three intellectual requisites of a scientific worker in which Sir W. Watson Cheyne comes, as it appears to me, hopelessly short.

I have already incidentally to the discussion of his experiments on the penetration of living tissues by antiseptics sufficiently illustrated his incapacity for seeing in connexion with the data of experiment the fact that they admit of many alternative interpretations. Let me therefore pass directly to the second heading and try to show that when Sir W. Watson Cheyne brings the data of laboratory experiments to bear upon clinical work he puts things to himself in a very loose way, and does not think in terms of definite quantities and measurements. Take the following sentence and let me italicise in it what is non-quantitative and amateurish.

"Almost all antiseptics have their bactericidal properties *much reduced* in presence of albuminous materials. Mercurial salts and iodine are good examples of *this*, these antiseptics combining *strongly* with albumin, and losing their antiseptic properties *to a very marked degree*. Carbolic acid is also acted on but not *to so great an extent*, salicylic acid *does not seem* to be *so much* affected, and the hypochlorites form a chloramine which is itself *antiseptic*."

It will be seen that we have here only adverbial and adjectival quantitative expressions and nothing in the form of figures. And while it is, of course, in scientific as well as in general discourse legitimate to substitute for numerals, adverbs and adjectives, the point is that if we have not behind these a definite backing of figures, we are not talking the language of science. And that point one can very quickly determine. One simply takes these ostensibly quantitative statements and inquires whether they help or mislead the man who has to apply them to practical problems.

When we apply this test to utterances like those above it is immediately clear that the practical surgeon could never gather from them that it is all but impossible to mix into pus sufficient antiseptic to sterilise it. One might from the statements easily suppose that to sterilise pus would be a perfectly simple matter. Nor could the practical surgeon gather that in albuminous media antiseptics have as good as no penetrative power. Nor again could he gather that the antiseptic pastes and powders which Sir W. Watson Cheyne has recommended do not keep down infection in, let alone sterilise, wound cavities such as we meet with in war. And, lastly, the practical surgeon would be misled by that patter of "hypochlorites forming a chloramine which is itself antiseptic." In point of fact, Dakin has pointed out that the chloramine, which is formed when hypochlorites combine with albumen, loses its antiseptic power as soon as it encounters further albumen.

Everywhere both inside and outside the confines of this discussion we come up against the deplorable habit of leaving out of view the quantitative aspect. It is that unscientific method of thought that has begotten the dogma of the efficacy of antiseptics in wounds.

It still remains for me to make good that Sir W. Watson Cheyne, for all that he writes of these with assurance, has only a very nebulous idea of those biological processes which laboratory workers engaged in the study of the problems of immunisation have every day under their eyes.

The task I have here before me is, as I have already indicated, one of considerable difficulty.

It would be a different world if the non-expert could be made to feel as the expert does about discourse which brings up before the mind only foggy, inconsistent, and falsely outlined pictures. The expert knows that such language can proceed only from a man who is talking without knowledge of the facts. But in point of fact, this can be made plain only to those who are conversant with the subject matter and who have themselves striven after clear thinking. For example, it cannot be made plain to a layman in connexion with a quack that the man's way of expressing himself gives him away as one who has not studied his subject. And when it comes to much narrower confines we have still the same difficulty. It is only to those who are *bonâ-fide* workers in our own particular department of medicine that we can make fully apparent the vagueness and inefficacy of what is said by outsiders. The reader will appreciate that I am in this difficulty when I set myself to make good to readers who are not laboratory workers that Sir W. Watson Cheyne's utterances on matters which lie in the domain of the laboratory are always nebulous, and floating in air, and, so far as one can affirm anything of nebulous matter expressed in slipshod language, erroneous and inconsistent.

It may, however, be possible to convey some notion of Sir W. Watson Cheyne's want of grasp of his subject if I collect from different parts of his paper some of his pronouncements, point out where they fail in truth, and collate them to show what a hopeless tangle they make.

Let me select what he says on *the protective mechanism of the body;* and again on *the effect produced in the wound by hypertonic salt solution*—first, however, notifying my reader that if he is not particularly interested in these subjects or the working of Sir Watson Cheyne's mind he can, by skipping to the end of the small print, escape from what may be tedious,

To the reader who determines to persevere I would suggest that he should, taking first each separate term and proposition, and then the whole series of propositions, ask himself critically whether it conveys anything to his mind, and whether he can conceive of its standing in Sir W. Watson Cheyne's for anything definite and precise.

I may begin with what he has to say on *the protective mechanism of the body* (the reader has, of course, been forewarned that he must not expect from Sir W. Watson Cheyne precise or logical phrasing, or clear and concinnous mental images).

(*a*) "The bacteria (which, according to Sir W. Watson Cheyne's assumption, are at first free in the wound) penetrate into the tissues, and are having their first battle with *the tissues and the protective arrangements of the body.*"

The agents of defence in this passage are denoted quite vaguely by the term "the tissues," and again quite vaguely by the term "the protective arrangements." "Protective arrangements" will cover everything from phagocytes to whatever form you like of antibacterial substance.

(*b*) "In my opinion the *protective substances of the serum* and their action on bacteria constitute only one part of the defence, and there are *local protective arrangements.*"

Here the agents of defence are, on the one hand, the "protective substances of the serum," and "the local protective arrangements" on the other. Under "local protective arrangements" we have presumably to understand "tissues." And one wonders in connexion with the phagocytes whether they are here simply forgotten, or whether they are subsumed under "local protective arrangements."

(*c*) "The tissues assemble their *forces (chiefly cells)* and if the bacteria have been damaged (by applications of antiseptics) they are very quickly disposed of by the *phagocytes.*"

It would defy anybody to picture to himself "the tissues assembling forces (chiefly cells)." Nor is it only the figurative texture of Sir W. Watson Cheyne's language which is entangled. The blood fluids here fail to find a place in the bill: and the phagocytes are accredited with giving the *coup de grâce* to the bacteria rendered helpless by antiseptics. Here Sir W. Watson Cheyne is composing imaginative fiction. In point of fact, leucocytes are (and we shall presently see the practical importance of this) invariably held at a distance by strong antiseptics, and they are paralysed by antiseptics long before the bacteria are damaged. Moreover, bacteria which have been digested with antiseptics are, so far as we know, not thereby made subject to phagocytosis.

(*d*) "As the result of opening the abscess a quantity of serum is poured out, which in part sweeps away the cocci, and in part destroys them, as the result of the largely increased amount of antibacteric material which is thus brought into contact with them."

In this account the rôle of the fairy godmother is assigned to the serum; and Sir W. Watson Cheyne furnishes two commentaries on the serum—one of dispraise, the other of praise. A few pages back quite gratuitously ascribing to me the idea "that the protective arrangements reside in the

serum and lymph, and these are the most important materials," Sir W. Watson Cheyne writes: "I may point out that I differ seriously from Sir A. Wright as to these protective arrangements." To the passage cited above there is appended by way of relief this commentary: "This explanation, given in my book in 1894, and in my lecture in 1899, might have been copied from Sir A. Wright's papers at the present time. ..... I mention this, not from any vainglorious motives ..... "

There is, in point of fact, very little reason for vainglory. For "the cocci," if by these are meant staphylococci and streptococci, instead of being killed by the serum, flourish in it. And I now, leaving the reader to see whether he can make anything of this tangle, myself pass on.

We have still to see what Sir W. Watson Cheyne has to say on the *effect produced by hypertonic salt solution in the wound*.

In a communication to THE LANCET dealing with a lecture given by me in March, 1915, Sir W. Watson Cheyne directs his criticism to my statement that hypertonic salt solution draws out lymph from the walls of the *wound*, and that it does this by bringing into play osmotic forces. His comment is as follows:—

"Curiously enough, it is stated that this (the hypertonic salt solution) acts by osmosis, but this must surely be a slip of the pen. *Colloids such as lymph* dialyse very slowly, or not at all, and practically the only result of placing a strong solution of salt *outside a blood-vessel* would be the exit of water and salts *from the blood*. Any increased flow of lymph *into a wound* will be the result of *irritation*, and the question then arises whether salt is the best *irritant*, or whether, indeed, it is wise to use an *irritant* at all."

It will be seen that Sir W. Watson Cheyne here glosses over the fact that hypertonic salt solutions exert a powerful lymphagogic effect in the wound. He sees no reason to concede anything more than what is conceded in the words "*any* increased flow of lymph." Instead, he turns to the subordinate, and, from the standpoint of practice, irrelevant, issue of the causation of increased lymph outflow; and he decides that *any* increase would be due, not to osmotic forces, but to the irritant action of the salt.

One hopes that here Sir W. Watson Cheyne was not unconsciously reasoning after this wise: "If I allow the lymphagogic action to be ascribed to osmotic forces, it might be supposed that I allow that there is a scientific basis for the treatment; but if I say that the salt acts by producing *irritation* that will prejudice the method."

But whether Sir W. Watson Cheyne did or did not allow his scientific pronouncement to be influenced by considerations of this order, he fell here into erroneous implication and into logical error. He fell into *erroneous implication*. For irritants appropriately graduated—and I think Sir W. Watson Cheyne must have been conscious of this—evoke hyperæmia and lymph effusion from the capillaries; or, as the case may be, leucocytic emigration and cell-proliferation—all these being physiological reactions which find very useful application in wounds. And Sir W. Watson Cheyne fell into *logical error*. For if he had brought demonstration that hypertonic salt solution does not bring into play osmotic forces, this would not have made it an irritant. Any more than if he had brought proof that hypertonic salt solution acted as an irritant, this would have shown that salt does not bring osmotic forces into play. The one does not exclude the other.

But this is straying away a little, for what I have in view is to show that Sir W. Watson Cheyne has not, in matters such as we are here dealing with, any clear mental vision. Seeing in osmosis only the dialysing membrane, and remembering that colloids do not pass such a membrane, he recites that "*colloids such as lymph*" (let me tell him in passing that by this he means: *colloids such as the albuminous substances which are contained in the blood fluids and lymph*) "dialyse very slowly or not at all, and practically the only result of placing a strong solution of salt *outside a blood-vessel* would be the exit of water and salts from the *blood*."

Now this, considered as criticism directed to the statement I had made, is quite irrelevant. My statement was: the outflow of lymph *from the tissues* is due to osmotic forces brought into play by the salt. Sir W. Watson Cheyne's rejoinder is: the outflow of lymph from the capillaries *into the tissues* cannot be due to these forces.

We have here the same error of inconsequence as before. My statement about outflow from the tissues into the wound cavity may be right without Sir W. Watson Cheyne's about outflow from the capillaries into the tissues being wrong. Again, we may both of us be wrong or both of us right. In reality Sir W. Watson Cheyne's mental vision is never sufficiently acute to discriminate between two issues which are distinct but interconnected.[5]

We now come to what Sir W. Watson Cheyne says in the communication to which I am here replying. He writes as follows:—

"It is a well-known fact in physics that the interchange *between colloid and crystalline substances* is very slow and incomplete, and there is no doubt that any osmotic effect which would be produced by the introduction of brine into a wound would be chiefly the transudation of large quantities of water from the blood. At the same time, I have no doubt that the presence of brine in a wound does lead to a marked increase in the discharge which will contain a considerable amount of proteid material, derived not by osmosis from the blood, but from the irritant action of salt on the tissues."

I will take it that when Sir W. Watson Cheyne makes, as he does in the first sentence, the statement that in dialysis "crystalline substances are exchanged for colloids," this is only slipshod writing. For he has told us above that salts draw only water and not colloids through a dialysing membrane.

That correction made, Sir W. Watson Cheyne's statements are a repetition of what he said before, except only for the admission that hypertonic salt solution does induce an outflow of albuminous fluid from the walls of the wound. And, except as relates to the point he has conceded, my criticisms also remain as before.

Up to this point we have been appraising the value of the *a priori* evidence which Sir W. Watson Cheyne has adduced in favour of the thesis that it is possible to sterilise the wound by antiseptics; and have been trying to take the measure of Sir W. Watson Cheyne in his capacity as a laboratory worker and a scientific thinker. We now pass to consider the clinical evidence which he adduces to show that antiseptics may usefully be applied in wounds; and in connexion with this it may be well—limiting ourselves, of course, to the question of antiseptic treatment—also to appraise Sir W. Watson Cheyne as a surgical thinker.

Clinical Evidence Adduced by Sir W. Watson Cheyne to show the Efficacy of Antiseptic Treatment Applied to Infected Wounds.

The clinical evidence adduced by Sir W. Watson Cheyne in this paper may be catalogued as follows: One case of compound fracture of the leg reported by Lord Lister; a case of acute osteomyelitis treated by himself; and five cases of projectile wounds treated by his collaborator, Mr. Edmunds.

I propose briefly to summarise these and to consider what Sir W. Watson Cheyne wishes to make these cases teach, and what they really do teach.

We may begin with *Lord Lister's case of compound fracture* successfully treated by undiluted carbolic acid.

The description shows that this was a case where the integument was stripped off and the wound completely open; where the bone was not comminuted; and the muscles, though severely contused, were not much lacerated.

In other words, Lord Lister was dealing with a microbial infection limited, or all but limited, to the surface, and by consequence accessible to antiseptics. But in the wounds of similar gravity inflicted by projectiles, laceration and hernia of muscle and splintering of bone are the prominent features, and the microbic infection is disseminated in the tissues and has been carried down to inaccessible depths.

It will be clear from this that what Sir W. Watson Cheyne wants to make the case teach, and what the case does teach are quite different. He wants to make it teach that we can by antiseptics sterilise wounds which are inflicted by missiles. What it does teach is that where the mechanical conditions permit of the antiseptic being applied to the whole area and full depth of the infection success may be achieved.

[5] The reader who is perusing this dialectic, not with a view to studying the quality of Sir W. Watson Cheyne's mind, but with intent to get if he can from one side or the other clearer vision of the problems which have to be solved in connexion with wounds, will perhaps look to me to set out here, so far as I can do so, my mental picture of the cause of the lymph flow obtained by hypertonic solutions of salt. I conceive that the outflow of lymph from the tissues into the wound is due in chief part to osmotic processes—i.e., to processes of "diffusion" and "infusion," processes in which salt "diffuses" from the hypertonic solution into the tissues; and in which fluid with the albuminous substances contained in that fluid "infuses," or passes (in exchange) into the hypertonic solution. This is what happens when a mixture of agar with serum or egg albumen is covered in with hypertonic salt solution, and also I take it when a round of beef is put down into pickle. Moreover, neither in these cases nor yet in the comparatively recent wound, where the tissues are, except so far as they are crusted over by coagulated lymph and sloughs, lying bare, and where hypertonic solution finds its most useful application, can there be any question of a dialysing membrane interposed between tissues and wound cavity. I conceive that the active hyperæmia often produced by the hypertonic salt solution may play a subordinate part in the production of the lymph outflow. It may do so by increased exudation from the swollen capillaries. With regard to the outflow of lymph from the capillaries into the tissues, I can very easily imagine that the salt, in addition to causing hyperæmia, may by direct action upon the capillary wall modify that dialysing membrane in such a way as to facilitate the transudation of albumin. But obviously this is a question for direct experiment and not for *a priori* inference.

Sir W. Watson Cheyne, considering the report of Lord Lister's case, sees opportunity also for yet another lesson. Certain details of the case furnish, as he thinks, materials by which he can confute by a *reductio ad absurdum* my suggestion that where the condition of a wound is improved by antiseptic applications this may be due not so much to a direct destruction of infective microbes by the antiseptic as to useful physiological reactions evoked in the wound.

"In the case which I have narrated a very interesting and instructive complication arose. On the fractured leg there was at one side a small wound which was not treated by carbolic acid. After some days it was observed that this sore, instead of healing, was increasing in size, and presently hospital gangrene developed in it and caused a good deal of trouble. Thus we have the remarkable fact that not only in the same patient, but in the same limb, we have a large and very grave wound following an absolutely aseptic course, while in the vicinity a trivial wound became the seat of hospital gangrene. If, as Sir Almroth Wright suggests, the main value of antiseptics is due to their production of a *flow of serum*,[6] why did that *serum* prevent hospital gangrene in the large wound, and not in the small one? The *difference between the two really lay in the presence or absence of the strong carbolic acid.*"

What this passage really does bring out is that confused cerebration and deficient logic may deduce a wrong lesson from the data of clinical observation. Sir W. Watson Cheyne conceives that *serum* is synonymous with *flow of serum*. In other words, he can see no difference between serum which has by stagnating in an infected lymph-bound wound lost its antitryptic power, and been transformed into an ideally favourable cultivation medium for all manner of microbes, and an antitryptic serum constantly renewed and constantly bringing fresh antibacterial elements into action. Moreover, he fails to discern that the untreated wound must—for this almost always happens—almost inevitably have become *lymph-bound*, while there must almost certainly from the carbolised wound have been a considerable outflow. For this is the rule with wounds treated with undiluted carbolic acid; and, moreover, Lord Lister himself draws our attention to this point when he tells us that the wound which he carbolised was "provided with a porous cloth to absorb the blood and serum which must escape." It follows that *the difference* between the two wounds did not lie only in the presence or absence of the strong carbolic acid. And so even in this particular case we should be logically entitled to hold the view that the good result obtained by antiseptic treatment may have been referable, or may in part have been referable, to an outflow of lymph from the carbolised wound.

Following the order of Sir W. Watson Cheyne's paper we now come to a case of *acute osteomyelitis of the fibula* treated by himself with antiseptics.

Here a large abscess was found over the outer side of the fibula; the bone was bare, and the medullary canal contained pus throughout its entire length. This was filled in with borsal, the whole surface of the wound was rubbed with the powder, drainage-tubes were introduced, and the whole healed by first intention, and the boy, "when inquired for three weeks later," was reported to be "well and walking about."

Upon this case Sir W. Watson Cheyne's commentary, arranged so as to set its points out to advantage, is as follows:—

(*a*) "Now I ask any surgeon who reads this account to consult his experience and see whether this is not something new."

(*b*) "Certainly in my experience it is."

(*c*) "I hope, however, that I will not be held to be recommending this as the treatment of osteomyelitis in preference to ordinary surgical measures."

(*d*) "But it is a very extraordinary and unique case."

(*e*) "And is, I consider, a very remarkable testimonial for borsal."

All this shilly-shallying and uncertainty means that, not even for Sir W. Watson Cheyne has this case any probative value. Other surgeons who treat osteomyelitis without antiseptics will not have seen any case like it. Nor will surgeons who have treated osteomyelitis with antiseptics have seen anything like it. Nor has Sir W. Watson Cheyne himself with antiseptics seen anything like it. So that the case differs as much from cases which have been treated with antiseptics as from cases which have been treated without antiseptics. More than that, applying the criterion that 'what we believe, we can act on,' we see that Sir W. Watson Cheyne himself does not believe. "I hope, however, I will not be held to recommend this." And the sense of his words is:—'But, though borsal has never done as much before, and I do not think it at all likely that it ever will again,' "I"—and here I quote his words—"consider it a very remarkable testimonial for my antiseptic."

The judicious man, who recognises that in a case like this we are bound to remember that there is more than one possible explanation of extraordinary facts, will see that we need not here give any special credit to the borsal, and that it might quite reasonably be held that Sir W. Watson Cheyne's case was unique, not in the respect that the borsal was here specially effective, but in the respect that the microbes had all been exceptionally rapidly destroyed by the patient's mechanism of defence; or else in the respect that those microbes which survived at the time of the operation happened, by special providence, to lie exposed to the action of any antiseptic.

We come now to five cases "*bearing on the disinfection of wounds*" which Sir W. Watson Cheyne "hopes will be read and *studied*." I propose therefore to study them; in other words to subject them to critical consideration as *crucial* cases adduced to demonstrate the disinfection of wounds by antiseptic treatment. And let us note in this connexion, *first*, that when the success of a treatment is under investigation we cannot admit as *crucial* any case in which any other well-accredited therapeutic procedure is superadded; and, *secondly*, that it must be shown by control experiments, or must be indubitable to those who are familiar with the evolution of untreated wounds, that the cases adduced as evidence of the success of the treatment are such as one could not find parallels to among untreated cases. Moreover, when it is suggested, as is done in the cautious words I have put into italics (*vide supra*), that the wounds are sterilised by the treatment, it is imperative to bring bacteriological evidence in support of this suggestion. The catalogue of cases cited from Mr. Edmunds is as follows:—

The *first* was a perforating bullet wound of the skull with a small wound of entry and a small wound of exit into the mouth. The *second* was a contused wound of the scalp with a depression in the parietal bone. The *third* was a shrapnel wound in the region of the deltoid with longitudinal splintering of the humerus. The *fourth* was an extensive wound of the forearm with compound fracture. The *fifth* was an in-and-out wound in which the bullet passed superficially through the substance of the abdominal wall.

In the first two cases the wound was 'excised.' They ought therefore to go out of the list; and Sir W. Watson Cheyne ought not to have adduced them as crucial. In the three remaining cases the treatment and clinical event were as follows:—

CASE 3.—Here cresol paste was injected among the fragments of bone; the muscles were dusted with borsal and the wound was sutured except for a space left for a drainage-tube. The sutured portion of the wound healed "quite naturally"; there was after the withdrawal of the tube "a certain amount of discharge"; and when met about a month after his injury the patient was beginning "to get use in his arm."

CASE 4.—Here paste was injected between the bone fragments; and the surface was powdered with borsal.

"The patient was under observation"—let us remember that these are cases specially selected as crucial—"for *five to six days*, ample time for suppuration to become established, but this *never* happened."

CASE 5.—Here paste was injected in the trenches, and the wound without further treatment granulated up readily without any suppuration.

There being here no control cases it, of course, rests with those who have experience of the evolution of wounds to decide whether the cases cited by Sir W. Watson Cheyne can be paralleled among those treated only by ordinary surgical methods without antiseptics. I think judgment will here not be doubtful. Cases essentially similar to Case 5 are seen every day; Case 3 also could be paralleled; and Case 4 is very unconvincing.

Sir W. Watson Cheyne would have known that Case 4 is unconvincing if he had either appreciated the principle that it is much easier to repress leucocytic emigration by antiseptics than to kill microbes; or had ever at the base watched the evolution of cases which had been treated with his strong antiseptics at the front. After a delay he would have found all his antisepticised wounds suppurating and teeming with microbes.

[6] The reader is reminded that the italics in citations from Sir W. Watson Cheyne are my italics.

The suggestion that in the cases cited by Sir W. Watson Cheyne from Mr. Edmunds, the wounds were sterilised is not supported by the evidence of any bacteriological examinations. And *a priori* it is all but incredible that these wounds can have been sterilised.

With the exception of one further case casually introduced in the course of argument[7] and a very few trial experiments with hypochlorites which gave the impression that "the treatment properly applied was promising," the reader has now seen every particle of clinical evidence which Sir W. Watson Cheyne brings forward in support of his contention that antiseptic applications will sterilise wounds such as we meet in war. But his tune is: "What need have we of further witness?" "I think I have"—this is how he sums up—"produced sufficient evidence to show that Sir Almroth Wright is not stating the fact when he says[8] that antiseptics have completely failed to produce aseptic wounds in war."

Sir W. Watson Cheyne's 'Principles of Disinfection.'

We shall presently have to consider how and by what steps a man arrives at quite unchangeable convictions; but first it will be well to see how far Sir W. Watson Cheyne goes. For this we cannot do better than turn to a section of his paper entitled "Principles of Disinfection." We are there informed that—

"There are four points of greatest importance in carrying out the disinfection of the wound." They are as follows:—

1. *The surgeon must believe in the possibility of disinfecting "a wound."* "This is, *of course*," writes Sir W. Watson Cheyne, "*self-evident*, and I 'would' not mention it were it not that the possibility of disinfection has been 'investigated' (here the inverted commas are Sir W. Watson Cheyne's) by men who had previously expressed the opinion that such disinfection was impossible and would do more harm than good."

This is the writing of a man who is blindfolded by prejudice or who sets out to lead his reader, if a fool, into pitfalls. Let us go and have a good look at the pitfalls. (*a*) In the use of the wording "a wound" there is provision made for every kind of misunderstanding and evasion. "A wound" may mean "a simple uncomplicated wound" or "a projectile wound," or "a small or large percentage of projectile wounds" or "all such wounds"; and it can according to the necessities of debate be made to take any one of these meanings. (*b*) The inverted commas used in connexion with the word 'investigated' are designed to insinuate that there has been in the investigation of antiseptics, or in some particular investigation which he has in view, incompetence or bad faith. I would suggest to Sir W. Watson Cheyne that that sort of thing is always best put quite bluntly. (*c*) It is asserted that those who have investigated antiseptics in France have been men with preconceived notions who had expressed opinions from which they could not draw back. In reality, however, the effect of antiseptics has been investigated by all sorts and descriptions of surgeons and bacteriologists, who had, before the war, never as much as considered antiseptics in relation with projectile wounds. (*d*) While among all these investigators there must, of course, have been some who believed that "*disinfection*," if by that Sir W. Watson Cheyne means "*ineffective disinfection*" would be more likely to do harm than good; it is difficult to suppose that there were any who held that "*disinfection*," if by that Sir W. Watson Cheyne means "*effective disinfection*" could be anything else than useful.

But we must beware lest we give here exclusive attention to what are minor immoralities. Here the great outstanding fact is that Sir W. Watson Cheyne, claiming rank as a man of science, says unabashed, "You must believe a thing before you can find evidence of it!"; and that Sir W. Watson Cheyne, posing as a scientific champion of antiseptics, announces that, "If you do not set out with a belief in the efficacy of antiseptics, the facts will never bring that home to you." Everybody will feel that a man who ventures to say things like this has got himself into a plight where he will say absolutely anything. And the pity of it is that everyone would have agreed with this author if he had contented himself with emphasising that before a man takes it upon himself to say that it is impracticable to sterilise the large bulk of projectile wounds, he ought to have made a conscientious laboratory study of antiseptics, and to have supplemented this by painstaking practical trial.

2. *The surgeon must choose a suitable antiseptic.*—There is (*a*) a trap in the appellation "suitable." It is a trap in the form of a *petitio principii*. For it is postulated in the word "suitable" that we have at disposal antiseptics which are competent to sterilise our projectile wounds. And (*b*) on the top of the *petitio principii* we have an evasion. For Sir W. Watson Cheyne is studious not to particularise any antiseptic which would sterilise projectile wounds. "I shall," so runs his evasion, "presently give a few examples of the results with several different antiseptics." The reader has already studied everything that could possibly be called an example.

3. *The surgeon must see that the antiseptic has free access to every part of the wound.*—There are here two ambiguities. They are material to Sir W. Watson Cheyne. For when in controversy you employ ambiguous terms, and are then taken up in a way which is inconvenient, you can always assert—and if you are unable to think clearly, can with innocence assert—that the alternative meaning was your meaning. "Free access" is ambiguous. It may signify either that the antiseptic must be so placed that diffusion if were effective would carry your "antiseptic emanation to the place where it is required, or it may mean that the antiseptic must be directly placed where it is required. And again "every part of the wound" is ambiguous. It may signify "every part of the cavity of the wound"; or again it may signify—and it must in connexion with sterilisation import this—every part of the wound cavity and of the infected tissues round about.

When these ambiguities are brought out we see that Sir W. Watson Cheyne is placed on the horns of a dilemma. If the expressions "free access" and "every part of the wound" are interpreted in each case in the former sense, Sir W. Watson Cheyne's demands are ridiculously less than what would be required for the sterilisation of the wound. If, on the other hand, they are interpreted in the latter sense, everyone must realise that Sir W. Watson Cheyne is out of touch with the clinical facts, and that he is asking from the surgeon something quite impossible. And the practical surgeon will turn upon him and say something like this: "Am I to understand that, as a preliminary to the application of antiseptics, you require me, in the case of a chest wound, to follow up the projectile into the lung; in the case of a head wound, to open up the track through the brain; and in a perforating wound of the arm or leg to hemisect the limb—to say nothing of supplementing in each case with a series of crimping incisions into the walls of the wound with a view to providing access to the microbes which are there ensconced?"

4. *The surgeon must arrange for some of the antiseptic to remain in the wound for a considerable time so that it may continue to act.*—The fact that Sir W. Watson Cheyne erects this into one of his fundamental postulates brings out that there is not before his mind any clear picture of what takes place when an antiseptic lies in a wound and lymph begins to pour in. What occurs is exactly the same as happens when I have an antiseptic at the bottom of a test-tube and let an albuminous fluid which is infected with microbes very gently run down upon it. The antiseptic does not penetrate into the albuminous fluid and the microbes grow in it unrestrained. And there is no question of the antiseptic "continuing to act" in the infected fluid. It does not as much as begin to act.

But it is not only on the possibility of disinfecting projectile wounds by antiseptics that Sir W. Watson Cheyne has unchangeable convictions. He has them also on all subject matters which are in any way associated with this belief. He is, for instance, incapable of conceiving that antiseptics in any strength or in any form employed in the early stages for the purpose of sterilising a wound can do harm. All I need say with regard to this is that the harm that can be done under such circumstances by his antiseptic pastes has repeatedly been brought to his notice. And he is in a

[7] What Sir W. Watson Cheyne says about this case is referred to below.

[8] What I actually did say—I put it in a footnote because it is here of quite subordinate interest—is as follows: "I have not myself come across—and I have the permission of all my fellow-workers to say that they also have not come across—any satisfactory clinical or bacteriological evidence of the utility of antiseptics as employed in infected wounds."

position to know that this is one of the very few points in connexion with the treatment of wounds on which there is, one may say, universal agreement

Sir W. Watson Cheyne is also impenetrable to the idea that antiseptic applications might bring advantage to the patient otherwise than by a direct destruction of microbes. The question has, as the reader will remember, already been discussed in connexion with Lord Lister's case of compound fracture. But I may further reinforce here the point there made. For recurring again to the subject in connexion with a case with many bomb wounds of which some were treated with borsal and remained aseptic, while others were treated with hypochlorites and suppurated, Sir W. Watson Cheyne reasons as follows: "This again shows that, the lymph being the same in all the wounds, the difference in asepticity was due to the antiseptic and not to the lymph." There could not be a better example of what results from an incapacity to see anything other than what one allows oneself to see. For to every trained mind, coming fresh to the consideration of the data, it will be obvious that, on the top of the fallacies I have previously pointed out, we have here another very conspicuous fallacy. When you add to lymph in different wounds two different chemical agents which combine, perhaps the one in one way and the other in another, with albumen, you can no longer assert that "the lymph is the same in all the wounds."[9] And it follows that you cannot, as Sir W. Watson Cheyne here does, infer by exclusion that the "difference in asepticity" must be due to the antiseptic having in the one case killed, and in the other case having failed to kill the microbes.

Finally, let me show that Sir W. Watson Cheyne, for all that continually he is bringing up Lord Lister's name, fails to see that master's work in any broad perspective.

The miracle in surgery which was wrought by Lord Lister was wrought by showing that septic infections of surgical wounds can be prevented by the use of antiseptics. There was here a *master-idea*—the conception that it was possible by prophylactic measures against microbes to avoid septic infection. And there was associated with this a *procedure for carrying the idea into practice*—that was the employment of antiseptics.

Let us see now the position Sir W. Watson Cheyne takes up. Fusing together by association in his mind the master-idea and the procedure originally suggested for carrying out that conception, Sir W. Watson Cheyne regards the two as inseparably welded together. He has never as much as heard that the master-idea endures, and the method of applying it changes and grows old; and he deems himself to be doing battle for Lord Lister when he draws the sword upon all those who in loyalty to that master's ideal depart from the procedure which he taught.

Of them and of aseptic surgery Sir W. Watson Cheyne writes in the following exasperated and un-understanding manner:—

> "Unfortunately of late years a most unaccountable prejudice has arisen against antiseptics, with the result that students have not been educated in their use; indeed, they have been taught to deny their value, and to look upon them as old-fashioned and very objectionable substances."

Let us, coming to what is more directly in question in this paper, now follow the evolution of Lord Lister's thoughts from prophylaxis to treatment. Affiliated to his master-idea there came up in Lister's mind the therapeutic principle that it might be possible to arrest microbic growth in the wound and so overcome all sepsis. There followed Lord Lister's exploitation of antiseptics in the treatment of compound fractures and other infected wounds. And we have now Sir W. Watson Cheyne obsessed with the idea that antiseptics applied at the outset to projectile wounds will—despite all that we know about the anatomical characters of those wounds—prove efficacious.

And we now see to what this obsession conducts. It leads Sir W. Watson Cheyne to treat as enemies of the light, and therefore his enemies, all those who have urged that there is need of other therapeutic measures where antiseptics are ineffective.

Sir W. Watson Cheyne's Verdict on Physiological Methods of Treatment.

Let me in conclusion consider the judgment which Sir W. Watson Cheyne pronounces upon the measures I have proposed. It is, and every psychologist will recognise that it had to be, a verdict of unqualified disapproval. Let us see why this was bound to be so.

When an erroneous belief takes firm hold of a man, two bodies of thought will evolve side by side in his mind: one correlated with his obsession, and the other with the data of actual experience; and these will before very long come into open conflict.

But things do not end there. For when truth and untruth lie very unquietly together in a mind, and untruth cannot be thrown out, Nature always steps in and deals with the patient. She compels him to take error as his postulate, she insists on his putting away from him all those data of experience which conflict with it, and she comes and blots this and that out of his mind, until he has there instead of insoluble contradictions, a corpus of coördinated erroneous thinking.

This process for dealing with the situation by extruding the incompatible—this process which the psychologist has very infelicitously termed "rationalisation"—can be seen in operation everywhere. We see it in the circle of medicine when a man, to conserve his obsession, passes condemnatory judgment upon a treatment alleging grounds conspicuously inadequate. We see it again when he in the interests of his fixed idea sets aside unscrupulously a consensus of favourable opinion upon that treatment. And we see it once more when such a one, to maintain what is to him a mental postulate, brings up in appraising a therapeutic method everything that tells against, and suppresses everything that tells in favour of that method.

Let us now see all this illustrated in Sir W. Watson Cheyne.

We may take first his critical analysis of the programme of treatment I have proposed for infected wounds. Let me here briefly point out that one may in making therapeutic suggestions follow one or other of two policies. One may set out only those points which tell in favour of the proposed method of treatment. Or one may deliberately set out in addition also, so far as one knows them, all the points which would tell against one's treatment. It is this latter policy which I have—in connexion with prophylactic inoculation against typhoid fever and pneumonia, vaccine-therapy in general, here in connexion with physiological treatment of infected wounds, and I believe everywhere—pursued. And I have, I may say, done so in the face of much friendly *soi-disant* worldly-wise advice. Moreover, when there has been anything which appeared to me of moment to be brought up against my methods I have made it a matter of pride to try to be the first to say it.

Now I need not here consider what a critic might or might not appropriately do in appraising a therapeutic method which was represented to be faultless. And I am very far from thinking it a bad thing for a critic of a method to be more alive to its disadvantages than its author could ever be expected to be. But it will, I think, be disputed by nobody that every critic ought in the interests of science to make a genuine effort to hold the scales even, and that it is when, reporting on accounts honestly furnished, inequitable to report everything which is set down on the debit side and nothing that is set down on the credit side.

Now this is the method of Sir W. Watson Cheyne. He has simply taken the account which I have rendered of treatment by salt in its successive stages, has suppressed everything which tells in favour of, and has, adding nothing new of his own, copied down from me all I could find to say against that treatment.

It would be futile to make reply to criticism of that kind. I have simply to refer back to my publications, for in these there will be found set out over against the debit side also the credit side of the account. But I must try here to do Sir W. Watson Cheyne scrupulous justice. I do find in his criticism one new point which I had not myself made. It is this. "I have," he writes, "a strong suspicion that before long 'brine' will disappear from Sir A. Wright's

[9] It may not be amiss here to indicate that wounds treated with hypochlorites which have recently come into use apparently suppurate less and heal better than did the wounds in the earlier period of the war with the antiseptics then in use, and to point to the probable explanation of this fact. That explanation is almost certainly to be found in the circumstance that the hypochlorites differ very markedly from antiseptics such as carbolic acid and iodine with respect to the effect they exert (*a*) upon trypsin, (*b*) upon the antitryptic power of the blood fluids, and (*c*) upon such mixtures of trypsin and antitryptic lymph as are encountered in the wound; and (*d*) upon blood and lymph coagulation and the outflow of lymph.

armamentarium." I would remind Sir W. Watson Cheyne 'that it is many a true word is spoken in jest'; and let me in connexion with this spoken in sarcasm quite earnestly tell him this: That which is of permanent value in connexion with any new departure in therapeutics is, as we have seen, the master-idea, and not the particular procedure for carrying it out. To the fact that this must hold true also of the treatment of wounds by physiological methods I trust my eyes are open; and I devoutly hope that as soon as there shall have been discovered a better agent for inducing in infected wounds the requisite physiological responses the prophecy of Sir W. Watson Cheyne's will be fulfilled, and "'brine' will disappear from my armamentarium."

We come now to what relates to the practical results obtained by physiological treatment of infected wounds. What Sir W. Watson Cheyne has to say about his personal experience of the results appears in full in the two following citations:—

(*a*) "As a matter of fact, some of the worst septic cases which I have seen since the war commenced have been in sailors who had been immersed in the *briny* ocean for *some time* after the infliction of the wounds. In such cases ... even when the patients were received into hospital *only a few hours after* the injury, their wounds were already *exceptionally highly septic*."

(*b*) "*I myself have* seen *cases* which have been treated in this way, and the state in which *many* of these patients reach this country from France is *quite sufficient evidence* of the want of success of the treatment employed."

In connexion with the *former* of these citations the reader who has studied Sir W. Watson Cheyne's paper will have perceived that there has been contrived for him an elaborate verbal trap. There has in the previous text been carefully substituted for the pretentious scientific appellation "hypertonic salt solution" the honest Anglo-Saxon term "brine," and we now see what Sir W. Watson Cheyne was after. Treatment by hypertonic salt solution is rebaptised "treatment by brine" to the end that the reader may judge of its harmfulness from what Sir W. Watson Cheyne reports of the effects of immersion in the "briny" ocean upon wounds. The wounds seen were he tells us "only a few hours after the injury exceptionally highly septic." Considering that "exceptionally highly septic" calls up in the mind a picture of wounds teeming with microbes; considering that one really finds in wounds when only a few hours have passed —for the good reason that those implanted have not yet had time to grow out—only extremely few microbes; and considering that Sir W. Watson Cheyne does not appear to have in view a series of cases of fulminating gangrene or streptococcic invasion—one here inevitably suspects him of inaccuracy. And this at any rate is certain that he is trafficking in fallacy when he implies that immersion in the sea, with probably cold and exposure and extreme physical exertion thrown in, is the physiological equivalent of applications of warm hypertonic salt solution.

We pass now to the *second* citation. Its most striking feature is its quite hopeless indefiniteness. "Cases" and "many" are entirely non-committal as to number. No one can tell whether "many" stands for a large or small proportion of the cases seen. And I think it can be gathered from what Sir W. Watson Cheyne says that he has confined himself to the inspection of cases on first arrival from France; and that he himself has not made any trial of physiological methods.

And as before here is also graver offence. Sir W. Watson Cheyne must perfectly well understand (*a*) that it is not permissible to judge of hypertonic salt solution scientifically applied by cases which have been treated by somebody or another, some time in the past, with some form or another of saline application; (*b*) that it is fallacious in the case of an application which requires constant renewal to take as a criterion of its efficacy the condition found in a patient just arrived from overseas with wounds long undressed; and (*c*) that when under such circumstances one finds the condition of a wound unsatisfactory—when, for instance, one finds pus—one is in connexion with hypertonic salt solution required to take cognisance of the fact that suppuration is inhibited by that solution only so long as this remains undiluted. And (*d*) Sir W. Watson Cheyne must perfectly well know that in judging of a therapeutic method you must always ascertain the condition of the patient before treatment; and in forming your judgment you must always compare that condition with the condition found after treatment.

We now pass to Sir W. Watson Cheyne's procedure in dealing with a body of evidence which is favourable to physiological treatment.

"But it has been said to me," writes Sir W. Watson Cheyne, "it is all very well to criticise these elaborate and difficult researches unfavourably. Sir Almroth Wright's treatment must clearly be successful, otherwise the numerous medical men at the front would not have remained silent for seventeen months." To this Sir W. Watson Cheyne replies: "This is quite a natural retort; but I have nothing to do with the actions of men at the front, and besides, there is such a thing as discipline."

Sir W. Watson Cheyne is perhaps not fully alive to the implications which his words carry. If that is so, he will perhaps allow me to tell him that "quite a natural retort" is language which implies that those who reasoned with him were in that sort of tight place which invites to retort and evasion. But if the incompatible fact here adduced placed, not Sir W. Watson Cheyne's friends, but himself in a dilemma, could anyone wish for a more perfect illustration of the psychological law that a man who harbours a fixed idea will travesty everything which comes into conflict with it.

And one word about the surgeons in France who have, Sir W. Watson Cheyne is informed, employed hypertonic salt solution with satisfactory success. "I have," says Sir W. Watson Cheyne, "nothing to do with the actions of the men at the front, and besides, there is such a thing as discipline." In other words, "I am not my brother's keeper, and I refuse to be answerable when he palters with the truth. But one must not ask too much of human nature, and must make allowances when opinion is tongue-tied by authority." Here, as I take it, we have Sir W. Watson Cheyne saying that he cannot seriously believe. He is too intelligent to suppose that private expression of opinion —and it is private expression of opinion which is in question —could ever be suppressed; and it is difficult to imagine that he does not know that in the medical service of the Army the public expression of opinion on questions of treatment is, and has always been, perfectly free.

We now come to Sir W. Watson Cheyne's summary of the practical results obtained; and to his attitude towards accepting from the laboratory therapeutic suggestions. Let me bring together from the four corners of Sir W. Watson Cheyne's paper his utterances on these matters. They are as follows—and I permit myself running comment and annotation:—

(*a*) "There are *evidently several* (one wonders why 'evidently,' and one wonders why 'several') fallacies at the bottom of Sir A. Wright's work, otherwise he would get clinical results which he could show us."

(*b*) "And what are the results? (Sir W. Watson Cheyne means, 'Where are the detailed reports of clinical cases?') There is no mention of them."

(*c*) "Certainly it is a very annoying type of man (Sir W. Watson Cheyne feels that he deserves well of the community for being that type of man) who wants some evidence before he accepts a statement as correct; but I do think we might at least have had one or two illustrative cases."

(*d*) "Instead of that we have to be content (Sir W. Watson Cheyne means that he thinks he is invited to content himself) with *hypotheses* deduced ('hypotheses' stands here for 'inductions') from a number of experiments with capillary tubes, and if the clinical facts (Sir W. Watson Cheyne puts into my mouth this bluster) do not seem to agree with the *hypotheses* (here again 'hypotheses' stands for 'inductions') so much the worse for the facts."

(*e*) "I would now ask the questions, Had Lister never lived, or introduced his system of *wound treatment*, would the method advised by Sir Almroth Wright have produced a similar revolution in *surgical treatment* to that effected by Lister? Would there have been the same remarkable pilgrimage of surgeons and scientific men from all quarters of the globe to be instructed in Sir A. Wright's *theories with their curious mixture of fact and fantasy*,[10] and to see no clinical *aseptic* results?"

(*f*) "Let bacteriologists migrate from France to England. ..... Incidentally the surgeons at the front might take advantage of the absence of the bacteriologists to try what could be done by *more purely surgical methods*."

We have in this series of citations, as the reader will see, something very different from clear scientific thinking and objective discussion.

Let me first clear up a fundamental confusion. Sir W. Watson Cheyne has misinterpreted "that remarkable pilgrimage of surgeons and scientific men which came from all quarters of the globe" to see Lord Lister's work. They

[10] One is at a loss to know whether Sir W. Watson Cheyne intends this to mean: "Theories based upon a curious mixture of true and erroneous observations"; or, "theories which are composed in part of fact and in part of phantasy." If the words are intended to bear the former meaning the erroneous observations ought to be specified; if they intended to bear the latter, it may be pointed out that a theory cannot be composed in any part of fact. It is all phantasy and imagination—in other words, it is a picture in the mind of something not directly brought to the cognisance of the senses.

came to see not an effective treatment for septic wounds, but an effective prophylactic procedure. Now—as everybody knows—prophylaxis is from the point of view of its achievements on an entirely different plane to treatment. In prophylaxis, we work up to an ideal of 100 per cent. of complete successes; in treatment, we rejoice when we can in any considerable proportion of cases achieve something for the patient; and there are cases where we know we cannot possibly succeed. It follows that in instituting a comparison between Lord Lister's great preventive work and any kind of therapeutic work, Sir W. Watson Cheyne is quite gratuitously weighing the latter with false scales and weights. But I may quite plainly tell Sir W. Watson Cheyne that, if instead of comparing prophylaxis with treatment he had wished to institute a comparison between treatment and treatment, he could very easily, in any hospital where physiological methods are applied to septic wounds, have found out that these give results much superior to those, as he himself recognises, deplorable results obtained by Listerian treatment.[11]

But let me here seize the opportunity for saying that just as there are in treatment by antiseptics fixed limits to its utility, so also is it with treatment by salt. Salt, though it can penetrate through albuminous fluids into all the recesses of the wound cavity, has yet, in the matter of penetration into the walls of the wound, a clearly delimited radius of action. It can draw lymph and affect leucocytic disintegration and emigration only down to a certain depth in the tissues. And a moment's thought will make it plain that it is not only where microbes have been carried in beyond the radius of action of the salt that we must expect physiological treatment to fail. We must expect it to fail also when the blood fluids and leucocytes which are drawn to the seat of the injury are incompetent to deal with the infection.

Let me next take Sir W. Watson Cheyne's gravamen that I have not furnished any report of wounds treated with salt, and that I have, he thinks, asked him to accept statements unsupported by evidence, or supported only by such indirect evidence as is furnished by experiments conducted in capillary tubes.

There are here, in point of fact, two closely interrelated issues. The one is whether one is entitled to claim, *generally*, that no statement shall be made unless supported by evidence; and, *in medicine*, that no therapeutic suggestion shall be made unless there are at the same time brought forward clinical cases establishing the utility of the treatment. The second issue is whether, in science *generally*, where only indirect experiments or observations are adduced in support of a proposition; and, *in medicine*, when only laboratory experiments are adduced in support of a therapeutic suggestion—it is legitimate to set these aside as without force.

These are in reality questions not of logical obligation, but of expediency. For myself, the broad principles which I have taken as guide are as follows. When the evidence required for testing the value of a prophylactical or therapeutic method is not of easy access, or where for the formation of a trustworthy judgment evidence has to be brought together and presented as a whole, it seems to me incumbent upon the author of the method to bring together the evidence. When the method was on its trial I did this for antityphoid inoculation; and more recently[12] I have done the same in connexion with prophylactic inoculation against pneumonia and its treatment by vaccines.

There is, as I think, one other case where the author of a therapeutic suggestion must, if he wants to establish his case, publish clinical cases in detail. He will have to do this when his therapeutic suggestion has been taken up and tested by others, and has by them been put aside as useless. Sir W. Watson Cheyne, for instance, found himself in this plight in the matter of the sterilisation of wounds with antiseptics. If he did not want to let the thing go by default it was incumbent upon him to publish cases showing conclusive evidence of success.

But the evidence for judging of the utility of a therapeutic suggestion is not always difficult of access. In many instances there are abundant opportunities for testing its efficacy, and these come to practically every medical man. When this is the situation the scientific author has to remember that, even if the publication of a few successful cases may perhaps usefully serve as a decoy; despite of that, his own cases cannot, either with respect to numbers or probative force, for a moment compare with those impartially observed and adjudicated upon by the general body of the profession. Now we have in the treatment of wounds pre-eminently a case to which this applies. To-day thousands of medical men have opportunities for applying in connexion with wounds, and adjudicating upon, any therapeutic method that may be brought forward. And in the particular case of treatment by physiological methods, this had, when I wrote, already been extensively tried, and was every day being more extensively experimented with. There was therefore no occasion for me to publish any decoy cases—not even those "one or two illustrative cases" which Sir W. Watson Cheyne thinks "he might have had."

In reality the logical situation is quite other than he supposes. I was not claiming from anyone that he should accept statements unsupported by proof. Instead I was inviting every surgeon who might think physiological methods of treatment deserving of a trial to put these to the proof. And I was holding back my own evidence simply because this left the field clearer, and was superfluous.

We now come to the second issue—to the issue as to whether it is legitimate to put aside as unsubstantiated matter, a therapeutic suggestion which is substantiated by laboratory experiments. In suggesting that it is legitimate to do this Sir W. Watson Cheyne is kicking against the pricks.

It is now too late in the day to doubt that all prospect of advance in medicine, and all our hopes of good, lie in applying in practice what is learned in laboratory experiment. And Sir W. Watson Cheyne is fully conscious that he has in his advocacy of antiseptic methods throughout contended that they were methods substantiated by his laboratory experiments. He therefore deserves to be told to stand down when as soon as other laboratory experiments cast doubt on antiseptic treatment and support another method, he comes and tells us that all therapeutic suggestions which rest on laboratory experiments ought to be written off, and all bacteriologists should be withdrawn and surgeons should go back to "more purely surgical methods." He forgets that it is not the wounded man who would profit from the withdrawal of the men whose special job it is to study the methods by which microbes can be destroyed in the body. In reality the only soul who could profit would be the man who is so obsessed with the old ideas as to extrude from the world, if he could, everything that is incompatible with them—suffering no new thing to come up which did not conform to tradition.

Let me, in conclusion, in return for that admirable admonition, "By their fruits ye shall know them," which Sir W. Watson Cheyne prints for me in the forefront of his polemical attack, address to him—and to any other who may be in danger of falling into his case—intellectual and ethical exhortation. I would invite to the study of the psychology of obsession; and would have all of us who follow medicine hearken to that saying of Emerson: "God has given to every mind a choice between truth and repose."

[11] *Vide* in this connexion the citations from Sir W. Watson Cheyne at the outset of this paper.

[12] Preventive and Therapeutic Inoculation in Pneumonia. London: Constable. 1913.

THE SANITARY CONGRESS IN EDINBURGH.—At the Annual Congress of the Sanitary Association of Scotland held in Edinburgh last week and presided over by Dr. Alexander Robb, county medical officer of health, various aspects of the tuberculosis question came up for discussion. Dr. Ernest Watt, medical inspector to the Local Government Board of Scotland, opened a discussion on the domiciliary treatment of phthisis and described the proper housing of the patient as of paramount importance. As yet, unfortunately, the ideal conditions for domiciliary treatment do not exist in either burghs or rural areas. Dr. G. C. Trotter, medical officer of health of Paisley, dealt with "The Tuberculous Casual" as a source of infection and suggested the provision of detention colonies. Dr. H. J. Rae, tuberculosis officer for Aberdeenshire, advocated the extensive introduction of "night camps" as the best means of overcoming the bad housing conditions of the consumptive. The economic aspect of the housing problem took up much of the time of the congress.

DIFFERENTIAL LEUCOCYTE COUNTS IN ENTERIC AND DYSENTERIC CONVALESCENTS.

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DURING an investigation upon infective and inoculation agglutinins it was necessary to determine whether the agglutinins present in the blood of the convalescents who had been inoculated against typhoid fever were due to the injection of dead bacilli or to an infection by living micro-organisms. Among the attempts made towards this end the condition of the peripheral blood was inquired into, and it may be of interest to record the results we have obtained. Some of the cases which presented diagnostic difficulties from the serological standpoint were those in which the early stages had been associated with symptoms of a typhoidal or paratyphoidal character, but in which subsequent examination showed the presence of a typhoid agglutinin and an absence of paratyphoidal agglutinins. This typhoid agglutinin might be an effect of inoculation or of a definite infection. In some instances the amount and permanency of the titre of the blood serum permitted a definite diagnosis; in others diagnosis was not permissible. For such cases additional means had to be resorted to, and it was conjectured that differential leucocyte counts might prove helpful.

On reference to the literature, we found few precise figures of the blood contents in typhoid, paratyphoid, and dysenteric convalescents. General statements were frequent as to hypo-leucocytosis with gradual relative increase of mononuclear cells and an early decrease of eosinophiles followed by an increase during convalescence, but actual numbers and details were not available. A useful tabulated statement was given by Mackie who, in 1905, described a possible case of paratyphoid fever, in which after the tenth week there was an eosinophile content of 28·6 per cent.

We decided, therefore, to make differential counts in a number of healthy inoculated men as a basis for comparison, and then to examine blood films from convalescent cases of amœbic and bacillary dysentery, typhoid and paratyphoid fevers. More than this the excess of routine work did not allow; but while we deplore the fact that we have been unable to supplement the following tables with total red and white counts, hæmoglobin percentage, &c., we submit that the restricted examinations have afforded some aid in differential diagnosis and indicated that in the cases coming from one area there was probably a common factor underlying the superficial manifestations.

TABLE I.

Disease.	No. of cases.	Polynuclears.	Eosinophiles.	Lymphocytes.	Transitionals and L. mononuclears.	
	Average of	Per cent	er cent.	Per cent.	Per cent.	
Normal counts	—	68·0	3·0	23·0	6·0	
Typhoid inoculation only	71	70·73	2·91	21·57	4·79	
Paratyphoid A	17	65·52	2·97	27·79	3·69	M.A.
,, B	33	69·78	2·78	23·21	4·25	M.A.
Bacillary dysentery	2	67·75	3·65	27·00	1·60	M.A.
Amœbic dysentery	10	68·20	2·20	25·00	4·60	M.A.
Paratyphoid A	5	53·5	3·9	35·4	7·2	F.B.
,, B	1	70·4	2·0	23·1	4·5	F.B.
Typhoid	6	49·30	2·16	40·64	7·9	F.B.
Paratyphoid B and entamœba histolytica	1	66·6	1·3	27·5	4·6	
	1	64·2	1·0	29·2	5·6	
	1	74·0	0·5	18·5	7·0	
Enteric and E. histolytica	1	65·7	4·8	27·0	2·5	
Jaundice and frostbite*	1	83·6	3·0	6·4	7·0	
	1	66·5	3·0	25·0	5·5	
	1	75·6	1·9	13·5	9·0	
Heavy lamblia†	14	69·8	2·7	23·0	4·5	
Amœbic dysentery—non-inoc....	1	70·5	1·0	26 0	2·5	
Typhoid—non-inoc.	1	64·0	2·0	31 5	2·5	

In this and following tables M.A. = Mediterranean area; F.B. = French and Belgian areas; and F.A = French area.
* No amœbic or paratyphoid organisms demonstrated.
† No other parasites demonstrated.

In Table I. we have grouped a series of averages obtained from the several types of cases. It will be seen that the figures yielded by 71 successive cases of men whose blood contained typhoid agglutinin only, and who had not manifested any enteric symptoms, are within normal limits. In the paratyphoid A convalescents the counts from men who had returned from the Mediterranean area are different from those received from French sources. The former show a larger percentage of polynuclears and a smaller lymphocyte content. In paratyphoid B there is hardly any difference, although only one case was available from northern infections, and a comparison is not allowable. In post-typhoid conditions, however, there is to be noted the persistence of low polynuclear and high mononuclear content, long after the pyrexia and acute conditions have subsided. This feature stands out in strong contrast with the differential count of the typhoid-inoculated men.

The statements in Table I. are intended to be general in nature, but it is obvious that averages will not satisfy even the most casual critic. The variations within the average, the relation of the generalisations to such conditions as the agglutinin content of the blood, the week of the disease or convalescence, and the more precise counting of the cells in accord with modern technics are all questions which demand consideration.

(*a*) *Relation of cell counts to the agglutinin titre.*—If we may take these in turn, that of the association of the agglutinin titre and the differential content may be first discussed. Table II. demonstrates the counts we have made from this standpoint. The content of agglutinin in anti-typhoid inoculated men does not appear to influence appreciably the polynuclear or the lymphocyte proportions. Neither does it affect the differential percentages in the paratyphoid A and B convalescents, although in those from the adjacent war zone there is the suggestion of a tendency towards the normal status of the polynuclears and mononuclears in the paratyphoid A cases.

TABLE II.—*Differential Leucocyte Counts in Relation to Agglutinin Titres.*

Disease.	Titre.	No. of cases	Polynuclears.	Eosinophiles.	Lymphocytes.	Transitionals and L. mononuclears.	
		Average of	Per cent.	Per cent.	Per cent.	Per cent.	
Normal counts	—	—	68·0	3·0	23·0	6·0	
Inoculation only ...	1/5000	6	72·5	3·6	19·7	4·2	
	1/2500	6	66·8	2·2	25·8	5·2	
	1/500	20	72·0	2·3	21·9	3 8	
	1/250	18	69·7	3·2	23·3	3·8	
	1/125	12	72·4	2·5	19·7	5.4	
	1/50	9	71·0	2·8	21·5	4·7	
Paratyphoid A	1/2500	5	68·4	1·7	24·7	5·2	
	1/1250	2	55·3	4·2	37·6	2·9	M.A.
	1/500	3	67·0	3·4	25·0	4·3	M.A.
	1/250	3	66·8	2·3	28·0	2·9	M.A.
	1/125	4	68·8	3 6	24·7	2·9	M.A.
Paratyphoid A	1/5000	1	44·0	5·0	40 5	10 5	F.A.
	1 2·0	1	45·5	3·5	42·5	8·5	F.A.
	1/25	1	51·0	4·0	37·5	7 5	F.A.
Paratyphoid B	1/5000	1	72·0	4 5	19·5	4·0	
	1/2500	5	68 0	1·4	25·7	4·9	M.A.
	1/1250	3	71·0	3·5	21·9	3·6	M.A.
	1/500	8	68·0	2·0	25·0	5·0	M.A.
	1/250	9	68 8	2·7	22·6	5 9	M.A.
	1/125	7	70·3	3·5	21·2	5·0	M.A.
Paratyphoid B	1/10	1	70·5	2·0	23·0	4 5	F.A.

The mixed infection of Entamœba histolytica and paratyphoid B fever appears to be associated with a decreased eosinophilia and a comparatively normal cell count otherwise. In jaundice and frost-bite, in which evidence of protozoa or paratyphoidal bacilli was not forthcoming, there is a distinct polynuclear leucocytosis. In heavy lamblia infections eosinophilia is not a definite feature, and the cell-counts are within average limits.

(*b*) *The stage of convalescence.*—The problems associated with the changes in the peripheral blood stream during the weeks of final return to health may perhaps gain some light by a consideration of the observations set forth in Table III.

After the sixth week the counts made upon the typhoid films show that the relative mononuclear increase and the polynuclear decrease persist for a considerable period; the same remark applies to the cases of paratyphoid A from the near war area. The paratyphoid cases from the distant war zone exhibit what are practically normal figures. We feel, however, that these latter findings must be read in the light of other considerations, and until many more than our 150 cases have been investigated we cannot accept them as final. More help is gained from the results of the typhoid infections, especially when the comparison is made with those obtained from inoculated men.

TABLE III.—*Differential Leucocyte Counts in Relation to Weeks of Disease.*

Disease.	Week.	No. of cases.	Polynuclears.	Eosinophiles.	Lymphocytes.	Transitionals and L. mononuclears.	
		Average of	Per cent.	Per cent.	Per cent.	Per cent.	
Normal counts...	—	—	68·0	3·0	23 0	6·0	
Paratyphoid A...	5–8	6	68·5	2·5	25·3	3·7	M.A.
,, ...	9–21	11	65 3	3·0	27·7	4·0	M.A.
Paratyphoid A...	6–14	5	52·02	3·8	38·18	7·0 ...	F.A.
Paratyphoid B...	5–8	14	71·0	1·8	21·8	5·4	M.A.
,, ...	9–18	16	66·9	2 9	25·4	4·8	M.A.
Paratyphoid B...	7	1	70·4	2·0	23·1	4·5	F.A.
Typhoid	6–10	6	49·3	2·16	40·64	7·9	F.A.
,, ...	10	1	69·5	3 0	24·0	3·5	
Typhoid inoculation only	2	1	64·5	4·0	27·5	4·0	
	10–13	2	66·0	1·5	25·25	7·25	M.A.
	13–50	10	65·8	2·3	28·3	3·6	M.A.
Time elapsed since injection...	50–76	11	67·12	3·2	25·4	4·28	M.A.
	30–38	2	61·1	2 7	31·7	4·5	*
	63	1	71·0	2·5	21·0	5·5	*
Typhoid—non-inoc. ...	26	1	64·0	2·0	31·5	2·5	
Amœbic dysentery—non-inoc.	18	1	70·5	1·0	26·0	2·5	

* Agglutinin absent from serum.

(*c*) *Differential counts by the Schilling-Torgau method.*—A more detailed enumeration of the various constituents of the white cells than we have already stated is expected nowadays, especially when protozoa may form an exciting or a superadded cause. Hence we present in Table IV. a series of differential counts after the manner of Schilling-Torgau, a method at present in vogue. The figures, in this instance, refer to individual cases and are classed according to the week of disease.

TABLE IV.—*Differential Counts by Schilling-Torgau Method.*

Disease.	Week of disease.	Mast cells.	Myelocytes.	Metamyelocytes.	Polynuclears—Rod nucleus.	Polynuclears—Multilobular nucleus.	Eosinophiles.	Lymphocytes.	Transitionals and L. mononuclears.	
		p.c.	p c.	p.c.	p.c.	p.c.	p.c.	p.c.	p.c.	
Normal count	—	1	0	0	4·0	63·0	3 0	23·0	6 0	
Entamœba histolytica	12	0	0	0	3·7	70·5	0·3	18·5	7·0	M.A.
	33	0	0	0	4·3	67·2	1·4	24·3	2·8	M.A.
	—	0	0	0	4·7	73·3	1·0	18·5	2·5	M.A.
Paratyphoid A... ...	10	0	0	0	2·0	51·5	2·0	40 0	4·5	M.A.
,, A... ...	15	0	0	0	3 0	58·5	6·0	31·0	1·5	M.A.
,, A... ...	15	0	0	0	4·5	65·5	2·5	20 9	6·6	M.A.
Paratyphoid A... ...	6	0·5	0	0	2·5	67·0	3·5	21·7	5·3	F.A.
,, A... ...	7	1	0	0	2·0	49·5	3·5	41·0	4·0	F.A.
,, A... ...	9	0	0	0·5	1·5	44·5	5·0	38·5	10 5	F.A.
,, A... ...	13	0	0	0·5	4·5	41·0	3 5	42·5	8·5	F.A.
Paratyphoid B... ...	7	0	0	0	3·5	55·5	3·5	32·0	5·5	M.A.
,, B... ...	14	0	0	0	4·7	57·3	4·0	32·0	2·0	M.A.
,, B... ...	16	0	0	0	3·3	46·7	1·0	45·0	4 0	M.A.
,, B... ...	18	0	0	0	4·0	68·0	4·5	19·5	4·0	M.A.
Paratyphoid B... ...	7	1	0	0	7·0	65·0	2·0	21·5	4·5	F.A.
Typhoid	6	0·5	0	0	3·0	43·0	3·0	41·5	9·5	F.A.
,, ...	8	0·5	0	1	3·5	44·0	3·5	42·0	7·0	F.A.
,, ...	8	0·5	0	0	2·0	49·5	3·5	36 5	8·5	F.A.
,, ...	10	1	0	0	2·5	37·0	1·0	52·0	7·5	F.A.
Heavy lamblia infection	14	0	0	0	2·6	72·4	3·0	20·5	1·5	M.A.
Coli infection	14	0	0	0	3·5	71·5	3·5	16·5	5·0	M.A.
Typhoid—non-inoc.	26	0	0	0	1·5	62·5	2·0	31·5	2·5	
Amœbic dysentery—non-inoculated...	18	0	0	0	3·0	67·5	1·0	26·0	2·5	

A scanning of the several cases brings out the normal amounts of the basophilic cells and the absence of myelocytes and metamyelocytes at these stages of convalescence. The rod-shaped polynuclears are within average limits, save in one case of paratyphoid B fever, in which the increase xplains the apparent polynuclear rise shown in Table I. The eosinophilous cells are, on the whole, just above the usual percentage. The polynuclear content is lowered in typhoid and paratyphoid up to the thirteenth week—in one case up to the twenty-sixth week—and the lymphocytes continue their high percentages during the same period.

Summary and Remarks.

We have not observed the distinct eosinophilia which we expected to find in these cases; in fact, the eosinophile percentages have not exceeded those we have met with in routine examinations of other forms of convalescence. This feature does not seem to offer much aid in the differentiation of an inoculation and an infective agglutinin when only one agglutinin is present in the blood.

With regard to other types of cell, the evidence we have accumulated at all events suggests that extended observations, with the addition of other important hæmatological procedures, may show that some information will be gained by the examination of blood films in cases of difficulty, and especially when we have to deal with continuous fever in men who have been inoculated with mixed vaccines against typhoid, paratyphoid A and B, and cholera. So far as we have been able to glean, it seems probable that when the agglutinin present is due to inoculations, the blood films will yield approximately normal figures, while in the case of an infective agglutinin the typical leucocytosis or polynuclear leucopenia associated with the causal organism will be found.

Further, the counts we have obtained from recently inoculated healthy men, should they be confirmed, would lead to the supposition that the cells which react to dead typhoid and paratyphoid bacilli may prove to be of a different order from those which act upon living infective typhoidal organisms. Just as the immediate transitory fever, slight malaise, and rapid formation of agglutinins following inoculation constitute a contrast to the slow rise of temperature, intense malaise, and fluctuating agglutinin production in typhoidal fevers, so it may be that the phagocytosis of the inoculated dead bacilli is carried out by a type of cell, such as a polynuclear leucocyte, acting more vigorously than the cell which brings about bacteriolysis in the living tissues during the course of disease. In other words, as we have elsewhere suggested, the line of protein cleavage of bacilli artificially killed may differ from that following lysis by endothelial cells, and the resultant antibodies may be of such a nature that while they confer biological immunity they are not capable of exercising the group or co-agglutinative influences manifested in connexion with the reaction to living micro-organisms. On such a slender basis as we now present, we are far from claiming that our contention is the right one. Still, it does not need much thinking in order to appreciate that a development of these conceptions might explain, to some extent, a proportion of the anomalies of vaccine therapy, and point the way to a more suitable fixation or chemical preparation of bacterial proteins prior to injection. It may be that the products of living cells have acted upon bacilli during the process of making "sensitised" vaccines in such a way as to facilitate the natural lysis and lead to natural chemical changes. If this becomes established it will explain the good results obtained in some cases with sensitised emulsions.

We are not yet satisfied that the figures obtained from our paratyphoidal examinations are really representative. There are differences between counts yielded by the convalescents from the various war areas which are more than should arise from errors of technique or from personal factors. For instance, we may take the following results. (Table V.)

TABLE V.

Disease.	Polynuclears.	Eosinophiles.	Lymphocytes.	Transitionals and L. mononuclears.	
	Per cent.	Per cent.	Per cent.	Per cent.	
Paratyphoid A	53·5	3·9	35·4	7·2 ...	F.A.
,, ,,	65·55	2 97	27·79	3·69 ...	M.A.
Paratyphoid B	70·4	2·0	23·1	4·5 ...	F.A.
,, ,,	69·76	2·78	23·21	4·25 ...	M.A.

In the cases from the French area there is a persistence of mononuclear increase and polynuclear decrease in the

paratyphoid A, which is different from those of the Mediterranean area. These discrepancies call for a consideration which can be given only when masses of figures are available for the statistician. In the meantime we may discuss, perhaps, such results as we have accumulated (see Table VI.)

TABLE VI.

Disease.	No. of cases.	Polynuclears.	Eosinophiles.	Lymphocytes.	Transitionals and L. mononuclears.	
	Average of	Per cent.	Per cent	Per cent.	Per cent.	
Paratyphoid A	5	53·5	3·9	35·4	7·2	F.A.
,, B	1	70·5	2·0	23·0	4·5	F.A.
Paratyphoid B + E. histolytica	3	68·26	0·93	25·07	5·74	
Paratyphoid A + E. coli	5	68·12	2·8	26·5	4·58	
Paratyphoid B + E. coli	5	70·8	1·8	23·8	3·6	
Paratyphoid + Lamblia intestinalis	5	67·7	2·8	25·0	4·5	
Paratyphoid A	17	65·55	2·97	27·79	3·69	M.A
,, B	33	69·76	2·78	23·21	4·25	M.A
Typhoid	6	49·3	2·16	40·64	7·9	
Typhoid + E. histolytica	1	65·7	4·8	27·0	2·5	

and make a further comparison of the counts yielded by paratyphoidal convalescents in whom we had demonstrated the presence of entamœba histolytica, with those obtained from entamœbic dysenterics without paratyphoidal infection and with pure paratyphoidal cases.

In Table VI. we may note that the purely typhoid and paratyphoid cases show counts which differ from those yielded by the typhoid plus protozoa and the paratyphoid plus protozoa. Also that the paratyphoid cases from the Mediterranean area approximate to the mixed type of counts both in their polynuclears and mononuclears as well as in the eosinophilous cells. It looks as if the coexistence of the protozoa in the paratyphoidal cases might account for the difference in the two types and that an average paratyphoid convalescent count has been modified thereby.

Now, remembering that we have shown elsewhere that of the paratyphoidal cases we have examined 10 per cent. were infected with entamœba histolytica, and that among the dysentery stools about 9·68 per cent. contained the entamœba, we may compare in Table VII. the counts from our paratyphoidal cases with those from definite dysenteries.

TABLE VII.

Disease.	Polynuclears.	Eosinophiles.	Lymphocytes.	Transitionals and L. mononuclears.	
	Per cent.	Per cent.	Per cent.	Per cent.	
Paratyphoid A ...	65·55	2·97	27·79	3·69	M.A.
,, B ...	69·76	2·78	23·21	4·25	M.A.
Bacillary dysentery	67·75	3·65	27·00	1·60	
Amœbic dysentery	68·20	2·20	25·00	4·60	

The findings are practically the same. That is to say, if we consider the 9·68 per cent. of positives in amœbic dysentery as a residue of cases which have persisted in spite of being subjected to treatment, then the 10 per cent. of the paratyphoidal cases might come under a similar heading and the majority of our counts for paratyphoids from the Mediterranean be subjected to closer scrutiny before they are included as representative of pure typhoidal convalescents.

Should our suspicions gain confirmation from further examinations and from results made known by other laboratories, then the views we have put forward from a study of the agglutinin contents of those cases would be supported, and the cases in which the leucocyte counts differed materially from those of French origin would be ascribed to a mixed infection and put in a class by themselves.

Further, our statement as to the lack of eosinophilia in post-paratyphoidal cases would call for qualification. The apparent absence of eosinophilia may arise from the coexistence of an amœbic infection. We have noted that leucocyte counts made a few weeks after the injection of a mixed typhoid-paratyphoid vaccine show a greater number of eosinophiles than do those obtained after a pure typhoid inoculation.

On the other hand, so far as the object of this paper is concerned, a confirmation of our results would establish the contention that when clinical diagnosis is not upheld by serological findings, the matter may be cleared up by timely examination of the total and differential leucocyte contents.

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Literature.—Allbutt and Rolleston: System of Medicine. Gulland and Good: Blood. Rogers: Fevers in Tropics. Castellani and Chalmers: Tropical Medicine. Osler: Practice of Medicine. Cantlie: Diseases of Warm Climates. Buchanan: Brit. Med. Jour., 1898, ii., 892. Flexner: Ibid., 1900, ii., 917. Mackie: THE LANCET, ii., 1905, 874.

NOTES ON THE VACCINATION OF GUINEA-PIGS WITH B. PERFRINGENS.

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THE following paper is a brief account of certain vaccination experiments carried out with Bacillus perfringens (B. aerogenes capsulatus). The animals used were guinea-pigs. Before considering the experiments with vaccinated animals it will be useful to give an account of the pathogenicity of B. perfringens for guinea-pigs.

Different strains of B. perfringens vary very markedly in virulence and the same strain may vary according to cultural conditions. It was found that a 24 to 48-hour broth culture gave a fairly uniform result in regard to infectivity, though fluctuations do occur. The infectivity of the organism was observed to be relatively very slight when inoculated in the form of a saline emulsion from a nutrient glucose agar slope. Moreover, saline emulsions of sporing cultures grown on inspissated serum failed to infect upon the two occasions on which this method was used, although the dose injected was in one case equal to three slopes emulsified and in the other equal to two slopes.

In determining the lethal dose and in all the infecting inoculations broth cultures of 24 to 48 hours were used. The animals were inoculated into the muscular tissue of the thigh, care being taken to cause no further injury than that occasioned by the insertion of the needle.

In vaccination experiments care must be taken to fix the lethal dose within fairly narrow limits. The lethal dose for a guinea-pig of 250 to 300 grammes was about 60 to 100 million organisms from a 24 to 48-hour broth culture of the more virulent strains. Four strains were used, of which S.R. 12, S.R. 8, and S.R. 9 were of very similar virulence; the fourth strain K. 13 was rather less virulent. Five million organisms of the more virulent strains failed to kill; one guinea-pig was killed with 30 millions, though its companion survived. Even at the 60 to 100 million dose a certain number survive; thus out of 52 guinea-pigs which received 60 to 100 millions of a living broth culture, 5 recovered, which gives a recovery rate of 9·6 per cent.

It should be noted that sometimes owing to some condition of growth which is not evident a strain may be less virulent for a time; thus on one occasion a group of guinea-pigs received 60 millions of a strain which usually kills at this dose, all the animals reacted but none died. This group is not included among the 52 animals cited above. It is, of course, obvious that the recovery rate is greater when the dose used is on the border-line of being lethal.

For the purposes of these experiments therefore it was concluded that 60 to 100 million organisms from a 24 to 48-hour broth culture of a virulent B. perfringens might be taken as the lethal dose for a guinea-pig of 250 to 300 grammes, but that in view of alterations in the virulence it is absolutely essential that every series of experiments be separately controlled. These doses refer to the particular strains used and to their condition during the period in question, and are probably not more than merely a general indication of the amount necessary to kill when pathogenic strains are used.

The following experiments were carried out to see if vaccination with B. perfringens afforded any protection against subsequent inoculation of a lethal dose.

Experiment A, of August 5th. 8 guinea-pigs (Nos. 94, 95, 96, 97, 100, 101, 102, and 103) vaccinated by injection of 3 doses four days apart of heated saline emulsion on July 21st, 24th, and 27th; doses 20 millions, 100 millions, and 1000 millions respectively of B. perfringens (S.R. 9 xxi.); vaccination complete on July 27th. August 5th: Infecting dose of 60 millions (S.R. 9 xxi.) living from broth culture injected. 3 guinea-pigs died within 18 hours, 3 died within 40 hours, and 1 died within 64 hours. 1 survived after severe reaction.

5 control guinea-pigs had same dose (60 millions living S.R. 9 xxi. from broth culture). 1 died within 18 hours, 2 died within 40 hours, and 1 died within 64 hours; 1 survived.

Experiment B, of August 12th. 5 guinea-pigs vaccinated. Saline emulsion heated S.R. 8 xviii: 27/7/15, 50 millions; 30/7/15, 150 millions; 2/8/15, 1000 millions. 12/8/15: Inoculated, infecting dose 60 millions of living bacilli from broth culture of S.R. 9 xxi. All the 5 guinea-pigs reacted and 3 had gangrene, but none of them died.

3 control guinea-pigs had 12/8/15 same dose, 60 millions, of S.R. 9 xxi. from broth culture. All the 3 control guinea-pigs survived; one had gangrene, one had œdematous swelling, one did not react.

In this case the infecting dose seems to have been sub-lethal.

Experiment C, of Oct. 6th. 25 guinea-pigs vaccinated with 1 dose of heated but not completely killed broth culture, 750 millions of S.R. 9 xxi. on August 7th. On Oct. 6th they were injected with 100 millions of S.R. 9 xxi. from a living broth culture. 20 guinea-pigs died within 21 hours, 2 died within 45 hours, 1 died within 69 hours, and 1 died within 90 hours. 1 guinea-pig survived.

Experiment D, of Oct. 6th. 5 guinea-pigs (Nos. 114 to 118) vaccinated with 3 doses at intervals of four days with saline emulsion from glucose-agar slopes of S.R. 12 xxvi.; emulsion heated but not completely killed; doses 50 millions, 150 millions, and 1000 millions respectively. Vaccination complete on August 2nd. On Oct. 6th 100 millions from living broth culture of S.R. 9. xxi. injected. 2 guinea-pigs died within 20 hours, 2 died within 28 hours, and 1 died within 69 hours.

Experiment E, of Oct. 6th. 3 guinea-pigs (Nos. 109, 111, and 113) vaccinated with 3 doses S.R. 8 xviii., heated but not entirely killed, saline emulsion four days apart; doses 50 millions, 150 millions, and 1000 millions respectively. Vaccination complete August 2nd. On Oct. 6th 100 millions from living broth culture of S.R. 9 xxi. injected. 2 guinea-pigs died within 20 hours and 1 died within 45 hours.

Experiment F, of Oct. 6th. 5 guinea-pigs (Nos. 104 to 108) vaccinated with 3 doses four days apart; doses 50 millions, 150 millions, and 1000 millions saline emulsion of strain S.R. 8 xviii. from glucose-agar slope heated but not completely killed. Vaccination complete August 2nd. On August 12th injection of living broth culture 60 millions of strain S.R. 9 xxi. They all showed swelling of leg and abdomen and 3 of them had gangrene, but all recovered. On Oct. 6th 100 millions from living broth culture of S.R 9 xxi. injected. 1 guinea-pig died in 20 hours, 2 died in 24 hours, and 1 died in 45 hours. 1 guinea-pig survived.

Experiment G, of Oct. 6th. 3 guinea-pigs (Nos. 154, 155, and 156) inoculated 12/8/15 with 60 millions from a living broth culture of S.R. 9 xxi.; all recovered. On Oct. 6th 100 millions from a living broth culture of S.R. 9 xxi. injected. 1 guinea-pig died in 21 hours and 1 died in 45 hours. 1 guinea-pig survived.

Experiment H, of Oct. 6th. Guinea-pig 90 inoculated 17/7/15 with 60 millions living S.R. 9 xxi.; had bad gangrene fourth day; recovered. Reinoculated 6/10/15 with 100 millions living S.R. 9 xxi. from broth culture. Died in 48 hours.

Guinea-pig 99 vaccinated 21/7/15 with 20 millions heated S.R. 9 xxi.; no reaction. Vaccinated 24/7/15 with 100 millions heated S.R. 9 xxi.; no reaction. Vaccinated 27/7/15 with 100 millions heated but not completely killed of S.R. 9 xxi.; had œdema and gangrene but recovered. Inoculated 6/10/15 with 100 millions from a living broth culture of S.R. 9 xxi.; died in 28 hours.

Guinea-pig 102 vaccinated as for No. 99; had œdematous swelling but no gangrene. Inoculated 5/8/15 with 60 millions from living broth culture of S.R. 9 xxi.; had bad perfringens œdema, but recovered without gangrene. Inoculated 6/10/15 with 100 millions living broth culture of S.R. 9 xxi.; died in 24 hours.

Control to Experiments C, D, E, F, G, and H, of Oct. 6th, 1915. 10 normal guinea-pigs inoculated with living bacilli from broth culture of S.R. 9 xxi. on Oct. 6th. 7 guinea-pigs died within 21 hours and 3 died within 45 hours.

Experiment I, of 17/7/15. Guinea-pig 21 inoculated 2/6/15 with ½ c.c. of 48-hour living broth culture of K. 13 B—about 100 to 150 million organisms; œdema, gangrene by ninth day, recovered. Inoculated 17/7/15, with 60 millions of S.R. 9 xxi. from living broth culture. Guinea-pig very ill, œdema, gangrene on fourth day, animal recovered.

Guinea-pig 33 inoculated 16/6/15 with 110 millions from living broth culture K. 13 B; severe œdema, gangrene on eighth day, animal recovered. Inoculated 17/7/15 with 60 millions from living broth culture of S.R. 9 xxi.; guinea-pig died with bad œdema in 90 hours.

Experiment J, of 17/7/15. Guinea-pig 34, inoculated 16/6/15 with 340 million organisms K. 13 B in saline emulsion from 48-hour glucose-agar slope culture; no perceptible reaction whatsoever. Inoculated 17/7/15 with 60 millions organisms from 48-hour living broth culture of S.R. 9 xxi.; died in 18 hours.

Guinea-pig 41, inoculated 25/6/15 with saline emulsion from three slopes of sporing inspissated serum culture of K. 13 B; very slight swelling of limb. Inoculated 17/7/15 with 60 millions organisms from 48-hour living broth culture of S.R. 9 xxi.; died within 90 hours.

Guinea-pig 44, inoculated 25/6/15 with saline emulsion from two slopes of sporing culture inspissated serum of K. 13 B; very slight reaction. Inoculated 17/7/15 with 60 millions from living 48-hour broth culture of S.R. 9 xxi.; had bad œdematous swelling, but recovered.

Experiment K, of 17/7/15. Guinea-pig 55, inoculated 10/7/15 with 5 millions organisms from 48-hour living broth culture of S.R. 9 xxi.; very slight reaction. Inoculated 17/7/15 with 60 millions organisms from living broth culture of S.R. 9 xxi.; died in 90 hours.

Guinea-pig 56, inoculated 10/7/15 with 5 millions organisms from living broth culture of S.R. xxi.; very slight reaction. Inoculated 17/7/15 with 60 millions organisms from living broth culture 48-hours growth of S.R. 9 xxi.; died in 66 hours.

Experiment L, of 17/7/15. Three guinea-pigs (Nos. 51, 52, and 53) inoculated, 2/7/15 with 5 c.c. filtered broth culture of ten days' growth of K. 13 B; swelling at site of injection lasting two days. Inoculated 17/7/15 with 60 millions organisms from living broth culture of S.R. 9 xxi., 48 hours' growth. One guinea-pig died in 62 hours, 1 died in 66 hours, and 1 survived.

Controls to experiments of 17/7/15. 15 guinea-pigs (Nos. 76 to 90). Inoculated with 60 millions organisms from living broth culture of 48 hours' growth of S.R. 9 xxi. Five guinea-pigs died within 36 hours, 5 died within 60 hours, and 2 died within 84 hours; 3 recovered.

Experiments F, G, and H are of particular interest. In Experiment F the animals (which are the vaccinated animals of Experiment B) were first vaccinated with three doses of B. perfringens vaccine and then received a slightly sub-lethal dose of a living broth culture, which produced a quite typical B. perfringens illness, from which they recovered. Upon subsequent inoculation with a lethal dose of living broth culture 4 guinea-pigs died and 1 survived. In Experiment G the 3 guinea-pigs are the control animals from Experiment B. They had survived a slightly sub-lethal dose of living organisms, but upon being re-inoculated with a lethal dose of living B. perfringens 2 guinea-pigs died and 1 survived. It should be noted that the surviving animals in all these experiments showed a severe œdema which in certain cases culminated in gangrene.

Guinea-pigs 90 and 102 from Experiment H are interesting in that they show that the recovery from a typical severe B. perfringens illness does not protect against a subsequent infection. Experiment I may also be mentioned in this connexion. Thus, guinea-pig 21 recovered from a bad B. perfringens illness, and 6 weeks later, upon re-inoculation with the living bacillus, repeated the illness in all its symptoms and again recovered; the nature of the second attack was in no way different from the first. Guinea-pig 33 had a bad B. perfringens illness from which it recovered, and one month later was again inoculated with the living bacillus, whereupon the illness was repeated and the animal died.

In the Experiments I, J, K, and L of 17/7/15 there were 10 guinea-pigs which, having had previous inoculation with B. perfringens in some form or its growth products, were then subjected to a lethal dose of the living bacillus, and out of these 10 there were 3 which survived, which is equal to 30 per cent. Of the controls to this series, 3 out of 15 survived, being equal to 20 per cent. Upon such small numbers this difference does not seem to be very significant.

Considering the results of Experiments A, C, D, and E, which are, strictly speaking, the vaccinated animals, out of 41 guinea-pigs vaccinated as detailed above, 2 survived the inoculation of a lethal dose of living bacilli, which is equal to 4·8 per cent. If the figures of all the guinea-pigs are considered which received previous treatment of any kind with B perfringens or its products (Experiment B is omitted), out of 62 guinea-pigs so treated 7, or 11·2 per cent., survived the inoculation of a lethal dose of living bacilli. While out of the 30 control guinea-pigs 4 survived the lethal dose,

that is, 13·3 per cent. It must be observed that, taking the figures of the previously treated animals in that way, there are included a few cases in which the treatment amounted to a selection of a naturally more resistant individual (viz., Nos. 90, 21, and 33). It may further be recalled that in determining the lethal dose of living B. perfringens it was found that 9·6 per cent. of unprotected guinea-pigs survived the dose.

The general conclusion from the experiments detailed above is that previous vaccination with killed or attenuated cultures of B. perfringens does not cause any appreciable raising of the resistance of guinea-pigs against a subsequent lethal dose of living bacilli. Recovery from a previous infection with the organism does not prevent a repetition of the illness upon re-inoculation with living bacilli, nor does it apparently in any way alter the symptoms or influence the course of the disease.

INFECTIVE JAUNDICE (SPIROCHÆTOSIS ICTERO-HÆMORRHAGICA).

A PRELIMINARY REPORT.

BY N. B. GWYN, M.D. ONTARIO,
CAPTAIN, CANADIAN ARMY MEDICAL CORPS;
AND
J. J. OWER, M.D. QUEBEC,
CAPTAIN, CANADIAN ARMY MEDICAL CORPS.

AMONG the cases admitted to our hospital as "jaundice," a certain number come under the heading of "acute infective jaundice," resembling closely the condition described as Weil's disease. Our attention was directed to the study of these cases by Colonel Sir John Rose Bradford, and from November, 1915, every such case has received particular attention. We have not had many patients with symptomatic jaundice, though some of the cases diagnosed as catarrhal jaundice may have been instances of the infective type of jaundice in a mild form.

The clinical course of the cases we have considered infective jaundice might be briefly given. An abrupt onset with chill, or a more gradual one with intense headache, dizziness, nausea, persistent vomiting, diarrhœa, and abdominal pain. In a few hours fever with thirst is complained of, and an intense aching of the muscles, particularly those of the legs. An irregular fever develops, jaundice is noted in 48 to 72 hours, at times of but slight degree, gradually deepening in the severe cases, in which, perhaps, a more marked biliary obstruction exists. Hæmorrhages into the conjunctiva and skin may take place. Bleeding from the nose, mouth, stomach, or bowels has been described, though in our cases neither black vomit nor melæna was observed. A decided albuminuria with numerous casts and red blood cells is a striking feature. In the severe cases the prostration is practically a collapse, the muscular soreness prevents movement, the muscles themselves may be actively inflamed, and the legs swollen. Active delirium, even in the absence of high fever, has been seen; drowsiness seems more common. After three or four days, in a mild case, the fever gradually drops; vomiting and abdominal and muscle pain subside; diarrhœa ceases; the urinary flow increases and the albuminuria quickly disappears. The colour fades (a deeply jaundiced patient naturally remains yellow for some time); slight or severe febrile relapses are seen, or a mild fever may continue for 12 to 20 days.

Continued vomiting, diarrhœa, and pain, with the signs of a severe toxæmia, may exist with no fever. A fatal case showed a subnormal temperature for the six days in hospital. The pulse is slow in relation to the temperature and symptoms, e.g.:—

1. Maximum temperature 103·4°; pulse 90-104; delirium.
2. " " 102°; " 76.
3. " " 104°; " 100.
4. " " 96°; " 80; fatal case.

Physically, jaundice of greater or less degree, with injection of the conjunctivæ, herpes, dry tongue, sordes, and late appearing papular rashes in a severely prostrated patient make the general picture of the disease. There is a total absence of signs or symptoms referable to the heart or lungs; and, contrary to the usual idea, liver and spleen are not easily felt or made out to be definitely enlarged. The abdomen is tender, not as a rule distended, resistant if the pain is extreme; no localisation of pain could be determined. In one case there was evident inflammation of the thigh muscles; and specimens from a fatal case showed a peculiar degeneration (Captain Pringle).

A leucocytosis, averaging 15,000 per c.mm., with a polymorphonuclear percentage of 80, and with a slight reduction of the red blood cells typify the blood condition. The urine has been described. The fæces are usually bile-stained and show occult blood reaction at times, but no parasites.

In six active febrile cases the search for a bacterial infecting agent gave the following results:—

—	Agglutination.			Blood cultures, anaerobe and aerobe.	Fæces-culture, typh.-colon group.
	T.	Para A.	Para B.		
1 ...	0	0	0	B. coli com. 24 hours a.m.	0
2 ...	0	0	0	0	0
3 ...	0	0	0	0	0
4 ...	1-50	0	0	0	0
5 ...	0	0	0	0	—
6 ...	0	0	0	0	—

Post mortem a fatal case showed a fresh pleuritis at the base of one lung; the heart muscle bile-stained, but in fair condition; the liver not enlarged, jaundiced, appearing more like a fatty organ plus some parenchymatous degeneration; bile-ducts patent, not dilated. The whole small intestine was the seat of a hæmorrhagic inflammation and the duodenum thickened; the pancreas unaltered, the adrenals normal; both kidneys large, their cortices pale, swollen, and bile-stained.

It would appear that the typhoid and paratyphoid bacilli can be excluded as causal agents in these cases. Sir John Rose Bradford called our attention to the description by Japanese authors of a spirochæte in cases of epidemic jaundice. In Case 4 (April, 1916) Major Bell could find no such parasites. Case 6 (May 7th) showed no suspicious organisms in the dark field, in stain, in culture; nor were guinea-pigs affected by 2 c.c. of blood intraperitoneally. In Case 5 (May 6th–7th), at the height of the disease, 20 c.c. of blood were taken and examined in the following way and with the following results:—

1. 35 c.c. of bile broth and 35 c.c. of bouillon were each inoculated with 1 c.c. of blood (aerobic culture).

2. 5 c.c. of fresh blood was introduced into 35 c.c. of melted agar (anaerobic culture).

3. Fresh smears of blood were examined on the dark stage, and smears were stained by Giemsa and Fontana. These were negative.

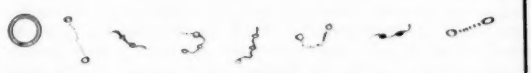
4. About 8 c.c. of blood was allowed to clot and a concentrated sediment of the exuded serum was obtained by cumulative centrifugation. Both on the dark stage and in stained smears a number of spirochæte-like organisms were found. On the dark stage these presented much the appearance of the spirochæta pallida, except that they were usually shorter, coarser, and not so regular or finely spiral. They were definitely motile, but had not the rapid spiral movement of S. pallida, showing rather a slower, undulatory, or wavy movement. They were few in number—eight in all being noted. In a Giemsa preparation they were not demonstrable; with Fontana a small number were found to take the silver impregnation readily, and are depicted on the following page.

At this time guinea-pigs were not available; nor did we have the report of the Japanese investigators. The following day, through the courtesy of Captain Houston, of the St. John Ambulance Brigade Hospital, we obtained a guinea-pig and injected, intraperitoneally, 2·5 c.c. of fresh defibrinated blood from the patient, who by this time, however, was distinctly improved. Examination of stained smears, and also of fresh specimens, on the dark stage at this time were totally negative, as were all subsequent examinations of both blood and urine.

The aerobic cultures were negative. On the fifth day, however, examination of the material from the deep agar anaerobic culture on the dark stage showed a few spirochæte-like bodies such as were seen in the first specimen at

the first examination. These were but slightly motile. Smears stained by Fontana show a moderate number of organisms which stained well. Giemsa-stained specimens were again negative. In subsequent examinations they had disappeared from the medium and could not be again demonstrated. The results of animal inoculation, so far, have been completely negative; but this may be due to the fact that we have received all our cases late in the disease.

FIG. 1.

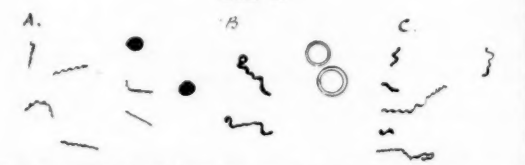


Myelin bodies from serum after 24 hours and from a hæmorrhagic pleural exudate, showing movements and various shapes assumed. Dark-field illumination. Red blood cell on the left as a standard of size.

FIG. 2.

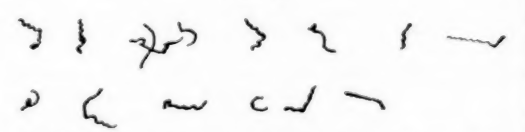
Motile spirochætal forms seen in centrifuged serum from Case 5, and drawn at the time of observation. Red blood cell as a standard of size.

FIG. 3.



Three types of spirochætæ under one observation. Fontana (silver) stain. A = treponema pallida (from chancre). B = spirillum obermeieri (from blood). C = spirochæta ictero-hæmorrhagica (from serum).

FIG. 4.



Spirochæte-like bodies in culture (three to five days). Fontana (silver) stain. 1/12 inch objective.

In connexion with these examinations, it was pointed out to us by Major Rowland that the so-called myelin bodies of the blood and exudates may cause confusion, especially when drifting in a current and showing their peculiar vibratory movement.

We are well aware that what we have described does not fulfil all the requirements necessary to prove a causal organism in an infectious disease; we have, however, been induced to describe our findings in the hope of encouraging other workers in what has been, so far, a very fruitless and very sterile field.

Note.—While searching for the parasite in the cases of jaundice, we made use of the syphilitic material passing through our hands. At the same time, through the courtesy of Major Wood, of the isolation hospital, we were able to see and stain specimens of the spirillum of Obermeier from a case of relapsing fever. The small drawings may thus be taken to represent three different types of spirochætæ, seen and stained under similar conditions.

ROYAL EARLSWOOD ASYLUM.—**This institution**, like many other charities, has suffered financially owing to the war, and the annual report shows that the loan at the bankers is now £4000, while overdue accounts amount to nearly £5000. On Jan. 1st, 1915, there were 484 patients in the institution, 327 being male and 157 female. Of the cases discharged 24 improved, 3 did not improve, and 20 died. Subscriptions should be sent to the secretary, 14 and 16, Ludgate Hill, E.C.

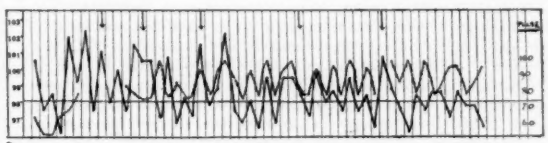
PNEUMOCOCCAL MENINGITIS WITH RECOVERY FOLLOWING VACCINE THERAPY.

BY A. CARNARVON BROWN, M.R.C.S., L.R.C.P. LOND.

THE following case is rendered noteworthy by reason of its occurrence in an adult, the presence of acute mania, and the extremely satisfactory way in which the symptoms yielded to the use of a vaccine.

The patient, aged 34, a bricklayer, left his work only 24 hours before I was called to him. He had been exposed to the cold, but not to an extent which would be unusual for a bricklayer, and the headache of which he complained was attributed to incipient "influenza." He had had slight nasal catarrh for some time. He became very acutely worse and when first seen was obviously very ill. He was just conscious, but irrational and extremely restless. Temperature, 101° F.; pulse, 90–100 per minute. His neck was stiff and somewhat retracted, with well-marked Kernig sign, and there were sores around the nostrils and lips as well as within the mouth. His teeth were in a very septic state, and the pharynx was reddened and unhealthy.

The patient was removed to hospital as soon as possible with a provisional diagnosis of cerebro-spinal meningitis. Immediately after admission lumbar puncture was performed and a rather thick, opaque fluid was withdrawn with difficulty. The pressure was not increased. He was then given, into the abdominal wall, an injection of anti-meningococcal serum and the fluid was sent for bacteriological examination. In the meantime he had become quite maniacal. He was incoherent and raving, using obscene language in the presence of doctors and nurses and very frequently endeavoured to get out of bed. He resisted with considerable vigour all attempts to control him and also tore up his bed-clothes. It was very difficult to feed him and he had incontinence of both urine and fæces. His pulse and temperature during this period, which lasted between two and three weeks, are shown on the accompanying chart.



A chart of a case of pneumococcal meningitis with recovery following vaccine therapy. Continuous line = temperature. Moniliform line = pulse. Arrows denote injection of vaccine.

Until the bacteriological report was available treatment was symptomatic and consisted largely of frequent doses of hyoscine. When it was known that the cerebro-spinal fluid contained not meningococci but pneumococci, vaccine therapy was commenced as soon as a vaccine (from Messrs. Parke, Davis, and Co.) could be procured. As lumbar puncture had seemed to afford some relief it was again carried out and once more seemed to cause some lessening of his extreme restlessness. The reaction even to the first dose of vaccine was much more marked: he became less rigid and more sensible and stated that his headache was less. The chart shows that there was a fall of temperature (in some cases delayed for 24 hours) after each injection. At first the fall was temporary, but after the third injection he seemed, although still very ill, to be definitely on the mend and only two other injections were given.

The acute stage lasted about three weeks and he now retains no memory whatever of this time. After that he soon recovered enough to be sent to a convalescent home, where he made a complete recovery, both mentally and physically.

The course of this man's illness was as gratifying as it was unexpected, and suggests the propriety of using vaccines in other and similar cases.

Since the commencement of the war I have seen, besides cases of meningococcal meningitis, this case of pneumococcal and one of acute tuberculous meningitis. A colleague tells me that he has seen several meningococcal cases, but also one case of acute streptococcal, one acute tuberculous, and three in which no diagnosis was arrived at in so far as the causative organism was concerned (these three were all civilians, two being adults; in none were there any petechiæ or other signs particularly suggestive of the meningococcal form)

These considerations raise the following questions: (*a*) Whether there may not be an increase in all forms of meningitis and not only in the meningococcal; (*b*) whether we are wise to base our ideas of meningitis so exclusively on a study of the meningococcal form; and (*c*) whether in particular it is not very inadvisable to subscribe to such unscientific statements as the common one that the spread of meningitis among soldiers is due to overcrowding and poor ventilation. If, as seems likely, there is really an increase in all forms of meningitis, we are certainly losing a golden opportunity in concentrating our attention so much on the meningococcal form. It is not a form which lends itself particularly well to investigation owing to the low vitality of the meningococcus, and this fact suggests that more knowledge might be gained by an occasional investigation of other forms. Whether this would probably be the case I must leave others to say and content myself with making the suggestion.

It is further unfortunate (although perhaps inevitable) that meningococcal meningitis is being investigated by two different authorities, the civilian and the military; neither has, in practice, any sort of free access to the other's cases, although there are but few local epidemics in which both civilians and soldiers are not involved. Most of the recent publications have been from the pens of military authors, and perhaps this in part accounts for the overcrowding myth above referred to. That it is a myth is apparent to anyone who knows the amount of overcrowding and lack of ventilation which is habitual with the class from which most of our soldiers are drawn, and who is able to compare it with the greatly improved state of affairs in even the least hygienic barracks.

The spread is no doubt due, on the other hand, to the general upheaval of the population which has brought far more susceptible persons into contact with any given carrier than could ever have occurred in civil life. Such contact may indeed take place in barracks and even be more effectual in an ill-ventilated room, but the latter as a factor in the epidemiology of the disease must always have far less weight than the two primary requirements for infection—viz., the presence of a carrier and of a susceptible person. If one is correct in thus laying especial stress on the increased chances of infection to which a susceptible person is now exposed, it follows that the increase of meningitis should be almost as great amongst civilians as amongst soldiers, for the former have also in great numbers left their usual habitations and adopted new ways of life. Figures bearing on this point may be available after the war, but one would like to be sure that they are at least being collected now. If they show something like equality of numbers affected amongst civilians and soldiers we shall perhaps be rid of that other half truth—viz., that cerebro-spinal meningitis is a disease of soldiers.

It may also be, as already hinted, that the "susceptible persons" are prone not to one but to all forms of meningitis. If that were proven, we might with more confidence approach the question of the route by which organisms reach the meninges—a question far from settled at present.

The object of calling attention to these problems is to suggest that all forms of meningitis ought long ago to have been made compulsorily notifiable—just as during an epidemic of small-pox we are accustomed to notify chicken-pox also. The failure to notify more than one form, and that a form not easily diagnosed in country practice, has certainly already lost much valuable information of epidemiological importance, and has probably led to an underestimation of the total numbers of the cerebro-spinal (meningococcal) form. One would also be well pleased to see a small committee of experts (such as might be appointed by the Epidemiological Section of the Royal Society of Medicine) charged with the investigation of the epidemiology of all forms of meningitis and with the collection of records of such cases as that described above.

Sevenoaks.

LITERARY INTELLIGENCE.—Mr. Edward Arnold announces among his autumn publications "Arboreal Man," by F. Wood Jones, M.B., D.Sc.; a sixth impression of "A Surgeon in Khaki," by A. A. Martin, M.D., F.R.C.S.; and a popular edition of "A Surgeon in Belgium," by H. S. Souttar, F.R.C.S.

A CROSSED HIP REFLEX IN ENTERIC FEVER.

BY E. B. GUNSON, M.D. EDIN., M.R.C.P. LOND.,
TEMPORARY CAPTAIN, R.A.M.C.

IN previous communications the presence of a crossed hip reflex of the following nature was described as occurring in a case of cerebral tumour,[1] various cerebro-spinal conditions,[2] and in diphtheria.[3] When the quadriceps femoris muscle mass is firmly grasped just above the knee between the thumb and fingers the patient experiences considerable pain referred to the site of stimulation, and there occur flexion at the hip-joint and extension of the great toe of the opposite limb. The reflex may be incomplete and consist of flexion at the hip only or of flexion at the hip and contraction of the tensor fasciæ femoris muscle without actual extension of the great toe; crossed extension of the great toe without flexion at the hip occurs in some cases. Pain on stimulation is a marked feature, and usually persists for several days after the reflex movements can no longer be elicited. Similar, but uncrossed, movements of the limb which is stimulated may also occur.

The present paper deals with the reflex in enteric fever, and is based upon 37 cases admitted to the 19th General Hospital, Alexandria, from Gallipoli during July and August, 1915, in which the state of the reflexes and the general condition of the patients were frequently noted. During the succeeding months similar observations were made by my colleague, Captain J. W. C. Gunn, R.A.M.C., in several hundred cases, and the incidence of the reflex was found to approximate to that of the present series.

As to the nature of the cases, in many the diagnosis of enteric fever was confirmed bacteriologically; some, however, were not examined bacteriologically, cases doubtful on clinical grounds being excluded from the series. Twenty-five patients had received two injections of antityphoid inoculation, four had not been inoculated. There were three severe and two fatal cases. The ages of the patients ranged from 20 to 40 years; all were healthy men prior to the onset of enteric fever.

Incidence of the crossed hip reflex.—The complete reflex was present on one side in four cases; in no case was the complete reflex bilateral. Nine presented an incomplete response, crossed flexion occurring eight times, crossed extension of the great toe in one case. Severe pain at the site of stimulation always accompanied the reflex movements and usually persisted for several days after these could no longer be elicited.

The reflex appeared as early as the second day of disease, and in one case persisted into the eighth week; the time of onset and duration, however, were very variable.

The reflex bore no absolute relation to the severity of the disease, but tended to be more complete and persisted for a longer time in severe types.

Other reflex changes.—Knee-jerks: These were absent or greatly enfeebled in seven which showed the crossed reflex (positive cases), and absent in 19 cases in which the crossed reflex was not present (negative cases). *Babinski's sign:* This was present in one positive and in two of the negative cases. *Ankle clonus* was not met with. *Abdominal reflexes:* These were absent or greatly enfeebled in nine of the positive and in 18 of the negative cases.

Significance of the crossed hip reflex.—The presence of the reflex in enteric fever is held to signify a "temporary perturbation" of the spinal cord, the result of a toxic or inflammatory process, on which some of the other reflex changes may also depend and to which the extreme weakness of the limb and back muscles may in part be attributed. The reflex was found to be of some diagnostic value, as it was never present in doubtful cases which on subsequent bacteriological examination proved to be simple enteritis.

[1] Gunson: THE LANCET, 1912, ii., 295.
[2] Macnamara and Gunson: Brain, 1915, xxxvii., 403.
[3] Gunson: Rev. of Neurol. and Psych., 1915, viii., 317.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF THREADWORMS IN THE APPENDIX SIMULATING ACUTE APPENDICITIS.

BY S. G. PAPADOPOULOS, M.B., B.S. LOND., M.R.C.S., L.R.C.P. LOND.,
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THE patient, a girl aged 12 years, was admitted to the Miller Hospital on July 1st with the following history. She was quite well up to two days previous to admission, when she woke up in the night with severe abdominal pain and vomiting. This was at first attributed to a fall during the same day. These signs, however, continued very severe the following day. She vomited bile-stained fluid continually and was unable to keep anything down. The pain, which was very severe, was localised to the right iliac region. The patient was examined by a private practitioner, who diagnosed acute appendicitis.

On admission the temperature was 103° F., the pulse 128, the respirations being 22. The patient had taken oil on the previous night and the bowels were opened once on the following morning. She appeared comfortable, but complained of a little pain at the right iliac fossa on palpation. The tongue was very furred and the breath offensive; the abdominal reflexes were normal. The abdomen was moving well on deep inspiration. The child said that the pain was easier since the bowels had acted. On palpation a definite swelling was felt about an inch above and on the outer side of McBurney's point. At the moment a retrocæcal appendicitis with rupture of an appendix abscess was suspected.

Operation.—Right rectus incision. The abdomen was quite free from adhesions or pus, the intestines appeared normal, and the appendix was found spreading upwards towards the colon; it was very long, but otherwise appeared normal. This was removed, however, and after examining the gall-bladder, kidney, and ovaries, which were normal, the abdomen was closed in the usual way. On examination of the appendix the mucous coat was found to be slightly injected, and the whole canal was full of colonies of actively moving threadworms.

The patient made an uninterrupted recovery. The temperature became normal (98·6°) on the following day and remained so throughout convalescence, and the pulse came down to 80. She was discharged from hospital 14 days later quite well. When the bowels were cleared three days after operation no signs could be found of any threadworms in the stools, nor were any found subsequently.

In this case no doubt the presence of threadworms in the appendicular canal gave all the signs of acute appendicitis.

A CASE OF RUPTURED ILEUM AND BLADDER; OPERATION; RECOVERY.

BY C. P. G. WAKELEY, M.R.C.S. ENG., L.R.C.P. LOND.,
HOUSE SURGEON, KING'S COLLEGE HOSPITAL, LONDON; SURGEON, R.N.

CASES of ruptured ileum are always more dangerous than rupture of the small intestine higher up, because the intestinal contents are more infective. The following case was operated upon about 12 hours after the accident. The mortality, according to Mr. R. P. Rowlands,[1] in such cases is 64 per cent.

The patient, a boy aged 10, was admitted to King's College Hospital on Dec. 28th, 1915, having been run over by a taxi-cab. On admission he was in a state of collapse. There was a bruised area on the lower abdomen where the wheel or wheels of the cab had passed over him, and the abdomen was rigid. He was put to bed and kept warm by hot-water bottles, and saline infusion per rectum was started. During the night he became very restless and complained of severe pain; this was relieved by a hypodermic injection of heroin hydrochloride gr. 1/12. Next morning the shock had passed off, and the temperature and pulse were both rising; the abdomen was distended and rigid, and there was dullness in the flanks. No urine had been passed. Operation was decided upon.

The abdomen was opened just to the left of the middle line. On opening the peritoneal cavity a large amount of blood-stained fluid escaped. On carefully examining the interior of the abdominal cavity a small rent was found high up in the bladder on the left infero-lateral surface. The incision was covered over with hot sterile towels and a suprapubic cystotomy was performed, a large drainage-tube being inserted into the bladder; no attempt was made to suture the rupture. This suprapubic wound was partially closed and covered up with sterile towels, and the abdominal cavity was explored from the upper incision. The whole of the large intestine was distended and a portion of the ileum about two feet from the ileocæcal valve was found to be ruptured; a localised abscess had formed on the posterior abdominal wall in the vicinity of the rupture, and the adjacent coils of intestine were covered with coagulated lymph. As the patient's condition was becoming serious a small Paul tube was inserted into the lacerated bowel; the abscess cavity was evacuated and two large drainage-tubes were inserted, one into the pelvis and another down to the site of the rupture. The small intestine with the Paul tube was sutured to the abdominal wall. The rest of the incision was closed with interrupted silkworm-gut sutures which passed through the whole thickness of the abdominal wall. The patient was put back to bed and continuous rectal saline infusion was started. The large bowel was emptied by a turpentine enema on the next day. There was some extravasation of urine into the perineum which necessitated incisions, but no suppuration took place, the perineum being frequently fomented, and the condition soon cleared up. The Paul tube came away on the tenth day and a fæcal fistula persisted. There was a profuse discharge from the abdomen, which persisted for some time; the pelvis was irrigated with hypertonic saline daily. The boy had a very hectic temperature; on two occasions it rose to 105° F., at night falling to 99°. The next morning, however (at the end of the second week), the temperature was more or less normal. The suprapubic drain was discontinued after seven days, but urine was passed through the suprapubic opening for six weeks, and the opening was slow in closing. The fæcal fistula closed on Feb. 12th. Abdominal massage was started after this, and the patient was discharged to a convalescent home on March 29th, exactly three months after his accident.

I have to thank Mr. A. Boyce Barrow for allowing me to operate on this case and for permission to publish it.

[1] THE LANCET, Feb. 26th, 1916, p. 459.

Reviews and Notices of Books.

The Animal Parasites of Man.

By H. B. FANTHAM, J. W. W. STEPHENS, and F. V. THEOBALD. With 423 figures. London: John Bale, Sons, and Danielsson. 1916. Pp. 900. Price 45*s.* net.

THE above volume is stated on the title-page to be an adaptation of Dr. Max Braun's "Die Tierischen Parasiten des Menschen" (fourth German edition, 1908), but the adaptation has been carried out on such broad lines that for all practical purposes the present treatise may be regarded as an independent work.

The volume is divided up into three main sections, dealing with the protozoa, helminthes, and arthropoda. The first section, that on protozoa (pp. 25–210), is written by Dr. H. B. Fantham, and gives a clear and exhaustive account of all those protozoa known to be parasitic to man. The parasites are arranged in their orders and are systematically treated, especial attention having been paid to morphology and life-history. That portion of this section which treats of the Mastigophora is worthy of mention as a model of complete and lucid descriptive writing. Attention should be called to the inclusion of accounts of Isospora and Eimeria, under the order Coccidiidea. Both of these coccidia have recently been noted as not rare parasites of the intestines of members of the Mediterranean Expeditionary Force invalided from Gallipoli. Dr. Fantham has included in this section descriptions of several organisms which are not of interest to the student of human protozoology, and one must conclude that a desire to give a connected account of his subject is the explanation of their presence.

The helminthological section (pp. 211–482) is dealt with by Professor J. W. W. Stephens, and in his hands the subject

is most ably treated. Especial attention is given to the anatomy, life-history, and pathological effects of all the more important of the parasites described. In the description of Clonorchis endemicus attention is called to the recent work by Kobayashi on the second intermediate host of this parasite. (A later paper[1] by the same author, which deals with the artificiality of the morphological differences between C. sinensis and C. endemicus, appears to have escaped Professor Stephens's notice.) The section on the Schistosomidæ is brought up to date by the inclusion of the results obtained by the War Office Bilharzia Mission in Egypt (1915), and an inserted slip, giving the morphological characters of the adult S. hæmatobium and S. mansoni, makes the record of these parasites complete. The sections on Cestoda and Nematoda are admirably arranged and clearly and concisely written. Professor Stephens is to be congratulated upon his excellent method of classification and his lucid presentation of a difficult subject. A short chapter on the technique connected with the preservation and examination of worm parasites is incorporated in this section.

Professor F. V. Theobald presents the subject of the arthropoda (pp. 486–616) in a fashion which makes it useful both to the student of medical entomology and to the practical sanitarian. The part played by the various species, as agents, in the transmission of disease is recorded; and much useful information, as to the methods by which their activities may be combated, is given. The classifications and synopses included in this section add greatly to its value. Supplements to the various sections, giving clinical and therapeutical notes, and appendices, which embody the latest information under the various headings, are included at the end of the volume. A bibliography, conveniently classified, is appended. Mention should be made of the excellent figures which illustrate the volume throughout.

Post-mortem Examinations.

By WILLIAM S. WADSWORTH, M.D., Coroner's Physician of Philadelphia. With 304 original illustrations. London: W. B. Saunders Company. 1916. Pp. 598. Price 25*s.* net.

Dr. Wadsworth, coroner's physician of Philadelphia, in his text-book on "Post-mortem Examinations" obviously has a mission—viz., the improvement of existing methods of performing such examinations and of interpreting their results. He is not content with a criticism of any one branch of scientific study as applied to the dead, but includes in his censure, at one time or another, almost the whole field of medical science. He claims, in his preface, that his work is somewhat in advance of the common level of post-mortem thinking and practice, and also that the variety and extent of his experience give him the right to speak with authority.

The author's method and style are, however, a very serious bar to the successful accomplishment of his task. The very criticism he himself applies to Virchow's Second Protocol, viz., "that after an examination lasting many hours and a report filling many paragraphs, one finds that the gunshot wound, which was the essential feature, has not been even tolerably described," aptly applies to his own book. What the author wants to teach is buried in a mass of wholly unnecessary verbiage, interspersed with flights of fancy which are difficult to accept seriously and marred by quite unnecessary gibes at all the branches of the profession. The first page of his introduction, for instance, is occupied by a discussion of what to call an examination of the dead! Forty-two pages are given up to a description of the enormous number of instruments which the author has found useful—and a microscope is not one of them. Surely one secret of success is to learn to use as few instruments as possible and to be a master of these rather than to be like the amateur running after every new toy. The chapter on the examination of the outside of the body contains some good photographs which are in marked contrast to those which the author tells us he has been at great pains to prepare of regions of the interior of the body. The object of these latter is to replace some of the anatomical plates which the author dislikes as being too diagrammatic and not strictly accurate. It cannot be said truthfully that his results are a success. Anything more obscure and confusing than some of them would be difficult to produce. The legend to Fig. 69 is characteristic of much of the author's style: "This photograph shows a number of things. There is an indescribable something which surely tells us the man is dead, without any tests. This something we instinctively recognise and though one hesitates to call it a sign of death, it is one. The hair is characteristic of chronic gastritis ....."

The hair is evidently a hobby of the author's. On p. 167 he says: "The association of red hair of a deep burnished copper type with blood-vessel disease is striking. I have come to speak of this type as hemic hair. The coarse, sparse hair of gastritis and the fine, buff-coloured hair of old liver degeneration are very characteristic ..... What I term the 'refrescent type' is one that is most instructive; its commonest form occurs in connexion with functional nervous disorders, sexual excess, and tuberculosis, and shows itself by red beard or a tinge elsewhere; otherwise the hair is quite dark." On pp. 132 and 133 he writes, "One does not find atrophic gastritis in a person with large thick lips. Nor does one give atropin in large doses to a person with yellow hair or cap the teeth of persons with red hair."

The neck, the alimentary canal, and the cerebral circulation are also specially emphasised. "The neck," he says, "is a singularly neglected part of the body—neglected in fact by nearly everyone, from the very clean young man who develops boils when the collar rubs in the dirt, to the specialist who fails signally when he tries to tell you about the hyoid bone"; and further, on p. 243, "The mere fact that executions have been for ages carried out by operating on the neck shows how generally its importance has been recognised by the non-medical part of the world."

When dealing with the intestines the author speaks almost with despair of the methods of dealing with them as described in "volume after volume" and "paper after paper." "One should be able at a glance to tell that a strong cathartic has been administered some time before death" (p. 341); but we are not really enlightened any further nor told clearly how. The internal carotid arteries, we are told, massage the optic nerves by their pulsations, "which appears to be a most important matter in the prevention of stasis in these nerves." The author stimulates our curiosity by the question, "Why do the lateral ventricles exist?" only to disappoint us by the remark that his views on the subject "are rather too radical to look well in print."

A careful perusal of the whole book leaves one with the impression that there is nothing new in it which is really helpful. What is good has been said before many times in far fewer words, and even the use of the "anatomical jargon," which the author refuses to employ, would have made the work both more readable and more comprehensible. It is impossible not to pass a word of censure on such a vulgarism as "the menstruating sex" or to excuse in a text-book such statements as the following:—"It is unfortunate that medical men come from the mass of the people rather than from some specially angelic tribe, for they bring with them all the characteristics of the outer world, and are therefore not always to be trusted" (p. 28). "I often wonder why it is necessary to have any lower conception for the medical profession than we have for what we regard as inferior arts" (p. 316). "Now when the surgeon chops the duodenum he sometimes ignores these simple little matters [the functions of the part] which not infrequently is good for business but very unpleasant for the patient" (p. 327).

The Mentally Defective Child.

By MEREDITH YOUNG. M.D. Edin., D.P.H. Vict., D.S Sc. Chief School Medical Officer, Cheshire Education Committee; Lecturer on School Hygiene, Victoria University of Manchester; Certifying Medical Officer to the Local Authority (Mental Deficiency Act), County of Chester, &c. London: H. K. Lewis and Co., Limited. 1916. Pp. xi. + 140. Price 3*s.* 6*d.* net.

THIS book is an expansion of lectures delivered last year as part of the special course of training for teachers of defectives at the Summer School held at Birmingham. Professedly written specially for school teachers and others interested in the educational treatment and after-care of mentally defective school-children, it is addressed to the lay reader rather than to the medical profession. Medical books on the subject are, however, freely drawn on, and this assistance is fully acknowledged in the author's preface. The opening chapter is devoted to

[1] On the Life-History and Morphology of Clonorchis Sinensis H. Kobayashi, Centralblatt für Bakt., Jan. 13th, 1915.

the examination of the mentally defective child and points to observe are concisely noted. The so-called stigmata of degeneration are set forth in some detail, and we are informed that "adenoma sebaceum" is not uncommon in imbeciles and chronic epileptics, a remark hardly justified by the comparative rarity of such cases recorded by other writers. Speech defects are fully and lucidly dealt with. Types of mental deficiency are illustrated in the second chapter chiefly by wood-cuts from original drawings, but in one case by a plate of a case of inherited syphilis borrowed from Shuttleworth and Potts's book.

Dr. Young still adheres to the theory of microcephaly being "probably due to a maiming of the brain by premature joining together of the bones forming the skull"; this view we thought had been entirely discredited by present-day physiologists, with the result that craniectomy has ceased to be practised in cases of microcephaly. Fig. 4, which purports to be the portrait of a cretin, lacks much of the characteristic aspect of this type. The thorny question of the Binet-Simon tests is discussed at some length in Chapter VI., and Dr. Young proposes certain ingenious modifications of his own in the way of interrogations (in his view) more easily put and answered; the practical superiority of these interrogations, it seems to us, can only be determined by the extended experience of himself and other observers, and of these we hope a record will be kept. In a matter resting, as the Binet-Simon system confessedly does, on an empirical basis, nothing short of this will suffice; and uniformity has an advantage over individual variations of detail. We doubt if the question suggested by Dr. Young for the child of 8, "Why is a bicycle-wheel not like a cart-wheel?" and that for 10 years, "How long is this table?" are really improvements on those in the Binet-Simon scale; and surely the question, "How many people could get into this room all standing up?" would be a poser for the average boy or girl of 14. With his remarks on the value of "general concepts" in assessing intelligence we are in sympathy. The illustrative cases given in Chapter VII. are interesting, and the chapter on education is suggestive. The remainder of the book consists largely of excerpts from the Acts regulating the school attendance of defectives and from regulations of the Board of Education with regard to special schools; and the Mental Deficiency Act, Elementary Education (Defective and Epileptic Children) Acts, 1899 and 1914, with consequent regulations, are printed *in extenso* in the appendix. It is of real use to have these official instructions in a convenient form.

The book is well got up and will be serviceable to the class for whom it is designed.

The Diagnosis of Nervous Diseases.

By PURVES STEWART, C.B., M.D. Edin., F.R.C.P. Lond., Physician to the Westminster Hospital, &c. Fourth edition, revised and enlarged. London: Edward Arnold. 1916. Pp. 589. Price 15*s.* net.

THE fourth edition of this well-known text-book retains all the features which have characterised the previous editions. Recent advances in our knowledge of the functions of the nervous system—for instance, that part of it which we know as the sympathetic or vegetative nervous system—have necessitated amplification of the sections devoted to that subject. A new feature of this edition is a chapter of some 70 pages on "organic war-lesions of the nervous system," in which the author has collected and described a select number of cases of brain, spinal-cord, and peripheral-nerve injuries coming under his own observation.

The continued success of this book is evidence not only of the increasing interest in neurology generally, but also of the thoroughly concise, complete, lucid and practical way in which Dr. Stewart has dealt with his subject. As an introduction to clinical neurology it has no superior, and one of its many merits is that it attracts the student to the field of neurology by its judicious simplification of complexities and its omission of non-essential details. The general style of the book, its diagrams, and illustrations and typography, also conduce to its attractiveness. In the past, perhaps, some may have been repelled from the study of neurology by an erroneous impression of its dryness and difficulty, but a perusal of this most readable book is calculated to dispel at once all such mistaken ideas.

A Manual of Gynæcology and Pelvic Surgery.

By ROLAND E. SKEEL, A.M., M.D., M.S., Associate Clinical Professor of Gynæcology, Medical School of Western Reserve University, &c. With 289 illustrations. Philadelphia: P. Blakiston's Sons. 1916. Pp. 680. Price $3 net.

THIS manual contains a practical and concise account of the main facts of gynæcological practice, special emphasis being laid upon diagnosis and treatment. The teaching approximates much more closely than is usual in books written by American authors to that current in the medical schools of this country, and it is therefore suitable for English students and practitioners. The author's teaching is on sound lines, and he is successful in limiting his remarks to those portions of gynæcology which especially apply to the practitioner and student rather than to the specialist. He has, however, added a very useful bibliography which should prove of service to anyone wishing to refer to original articles.

The advice that any erosion occurring in a patient during the cancer age, which fails to heal under ordinary treatment, should be investigated microscopically is very sound, and if conscientiously followed will result in the saving of many lives. A useful description is given of Percy's method of massive cauterisation in carcinoma of the uterus. We are quite in agreement with the statement that proper postural treatment in cases of chronic movable retro-displacements occurring a few months after labour is much better than the insertion of a pessary. The section on salpingectomy is particularly good, and the special points of technique on which Professor Skeel lays stress are important. But in view of the fact that the author recommends vaginal drainage, we are surprised that he does not mention this method of treating cases of suppurating ovarian cysts, which are so dangerous to deal with by the abdomen. In many of these cases the cyst can be readily and safely drained by the vagina. In considering the treatment of severe generalised infections the beneficial results which follow the intravenous injection of magnesium sulphate solution are called attention to, and although the mode of action of this procedure is unknown it seems worthy of further trial.

It is a pity that the author has not had the courage of his convictions and given up the use of the word endometritis for conditions which, as he points out quite rightly, are not of infectious or inflammatory origin, and for which the name is a complete misnomer. It is quite time that this was done, and it would clear up a great deal of confusion on the part of students.

On the whole, an interesting and good book, containing sound teaching. The illustrations are fair and the index is sufficient.

MISCELLANEOUS VOLUMES.

SOME WAR BOOKS.

THE supply of books written about different phases of the war seems unending, and the quality of this supply continues to be generally good, but this estimate cannot be applied to each volume of the particular collection here noticed.

Some vivid scenes from the tragedy of war are presented in *Red Cross and Iron Cross* (London: John Murray. 1916. Pp. 142. Price 2*s.* 6*d.* net). This book is written by an unnamed medical man who has the genuine instinct of the story-teller, and it puts on record certain details of German brutality which only could be believed on first-hand evidence. The author records his opinion that there has been a marked difference, as illustrated by the behaviour of the different units in this war, between the attitude of the Prussians and the South Germans, and rather discounts the common belief that the Bavarian has been particularly brutal and violent. ——Monsieur Emile Hovelaque has translated some admirable essays on the war which have appeared from his pen from time to time (*The Deeper Causes of the War*. By EMILE HOVELAQUE. Translated by the Author. London: George Allen and Unwin, Limited. 1916. Pp. 158. Price 2*s.* 6*d.* net). The short book which results is very informing, and the insight shown into national moods and aspirations is acute. Sir Walter Raleigh, who supplies a preface, considers that M. Hovelaque's statement "of the historical facts that underlie the present strife, of the beliefs and aspirations of

the German people, and of the German estimate of other peoples, is so full and true, that I should not be surprised if large parts of it were accepted by Germany as a convincing summary of her case." Sir Walter Raleigh adds that the nightmare which M. Hovelaque presents as the German conception of England has largely been due to the British habit of summing up and condemning ourselves, our own semi-serious criticisms having been adopted as our confessions of failure. We recommend the book cordially to our readers.

The Rev. R. J. Campbell discourses in an obvious, though eloquent, manner on the effects which the present war may be producing on humanity and on the Christian side of national character and life (*The War and the Soul.* By Rev. R. J. CAMPBELL, M.A., of St. Philip's Cathedral Church, Birmingham. London: Chapman and Hall, Limited. 1916. Pp. 277. Price 6*s* net). His message is to those who fear for the future of the Christian religion, "Trouble not yourselves," he says, "it is not Christianity that has failed but Christians." He finds that, in the war, of the two strongest tendencies in human nature, that towards self-preservation and that towards self-sacrifice, the latter has been predominant, and adds: "The very same men who will do mean and selfish things in the ordinary way of business will spring to arms and fling their lives away in the hour of their country's need, as we are now seeing. This impulse to self-immolation in presence of a great impersonal ideal, of something we feel has the right to demand our uttermost, is the very basic principle of the Christian gospel."——Mr. Lowes Dickinson is a well-known scholar and an admirable writer. His views (*The European Anarchy.* By G. LOWES DICKINSON. London: George Allen and Unwin, Limited. 1916. Pp. 153. Price 2*s*. 6*d*. net) will be considered, according to the temperament of their readers, as reasonable, or mischievous, as moral or weak-kneed, but they are sincerely addressed to those who desire a durable peace. He believes that the States of Europe will be unable to maintain peace, even though all of them should wish it, unless machinery is constructed for settling disputes and organising common purposes, the machinery to be backed by force. He finds in European anarchy the cause of European wars, gives his reasons briefly, but with much detail, and protests against the shearing away of territory from the vanquished by the victors.

Colonel Swinton and Captain Earl Percy have brought out a sequel to "Eye-Witness's Narrative of the War," which was published last year and which brought the story of the war up to the end of March, 1915. The present volume (*A Year Ago.* By Lieutenant-Colonel E. D. SWINTON and Captain The Earl PERCY. London: Edward Arnold. 1916. Pp. 217. Price 2*s* net) continues the narrative up to July 18th, 1915, when the series of descriptive accounts ceased to be issued by the Press Bureau. The narratives are printed in full as communicated by the Press Bureau, and the two volumes form a valuable historical document.——Mrs. Violetta Thurstan narrates the tragedy of the refugees in Russia, when over five million people were compelled to flee from their homes in the summer and autumn of 1915 before the great German advance through Poland (*The People Who Run.* By VIOLETTA THURSTAN. London and New York: G. P. Putnam's Sons. 1916. Pp. 176. Price 2*s*. 6*d*.). The story illustrates very well the motto on the title-page, that "The greatest tragedy of the war is not seen upon the battlefield." The number of refugees in Petrograd alone by Jan. 1st, 1916, was over 84,000, and a detailed description is given of how the municipal committee for the refugees, having an office in the Duma, organised depôts for the reception of their miserable guests, dividing them up into their Russian, Polish, Lithuanian, or other nationality, and provided help in money, clothing, and opportunities of work Near the Warsaw station, we learn, a maternity hospital for refugees, which was badly needed, was set up by the National Union of Women's Suffrage Societies, the committee of the Union paying the entire expense of outfit, journeys, and salaries, as well as a large monthly sum towards the upkeep of the hospital. The plight of refugees in Moscow and farther in the south and the interior, for example in Kieff and Kazan, is described with much detail, and it is quite evident that any help that can be given to the refugees in Russia will be very welcome.——Mr. Kirton Varley has written a book (*"Fool Culture": On Education, Culture, Misgovernment, and Destiny.* By KIRTON VARLEY. London: The Generation Press Company. 1916. Pp. 109. Price 2*s*. 6*d*. net) on the psychological and physiological effects of our present scholastic régime as illustrated to some extent by the circumstances of war. Many hard things are said about authority of all sorts in the work, which is a wholesale indictment of what the author describes as our culture, its political expression and scholastic education. The violence with which the author delivers his message obscures its clearness, even though it proves his sincerity.——Professor Lugaro, professor of neuropathy and psychiatry in the University of Modena, has written an interesting study of the character of the German and Austrian Emperors which has been translated by Dr. W. N. Robinson (*An Emperor's Madness or National Aberration.* By ERNEST LUGARO. London: George Routledge and Sons, Limited. New York: E. P. Dutton and Co. 1916. Pp. 135. Price 2*s*. 6*d*. net), but this book also suffers from a violent use of adjectives and the adoption of assumptions which seem sweeping where the writer is a psychological expert. The message, however, of the book is to convey a salutary warning. Professor Lugaro holds as entirely wrong the theory that the war is to be traced to the psychology of the two allied Emperors. He finds this hypothesis to exclude in a dangerous manner the consideration of the aspirations of the two peoples, and to support the illusion that an opportune death or a new St. Helena might suffice to resolve a crisis which is not individual but national. The book is very short.

New Inventions.

WRIST-DROP AND FOOT-DROP APPLIANCES.

THE accompanying illustrations show some appliances which have been found useful in the cases indicated. The apparatus shown in Fig. 1 is for use in cases of musculo-spiral paralysis, and acts as a splint tending to prevent over-stretching of the extensor muscles of the forearm. In addition the *spring* replaces the lost action of the extensor muscles of the wrist, so that there is increased use and power in the hand during the process of recovery. When recovery is not expected and tendon transplantation fails or is contra-indicated the apparatus may be worn permanently. The tension of the spring is easily adjusted.

FIG. 1.

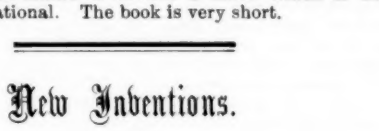
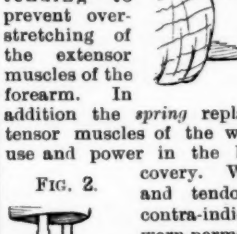


FIG. 2.



The large number of cases of foot-drop among the soldiers returning wounded from the front has led to the making of an apparatus to imitate the actions of the paralysed muscles. (Fig. 2.) In the apparatus the action of springs, communicating with the sole of the boot through a lever in front of the axis of the ankle-joint, represents the natural action. The arrangement is not cumbersome and the apparatus can be entirely concealed in the leg of the trouser.

Mr. Robert Whitelaw, 51, Woolmanhill, Aberdeen, and 11, Saville-row, Newcastle-on-Tyne, is the patentee and maker.

IRISH VICEREGAL MEDICAL APPOINTMENTS.—The Lord Lieutenant of Ireland has made the following appointments to the Viceregal Household:—Physicians in Ordinary: Dr. E. MacDowel Cosgrave and Dr. James Craig. Surgeons in Ordinary: Mr. Conway Dwyer and Mr. E. H. Taylor. Surgeon to the Household: Mr. W. I. de Courcy Wheeler. Surgeon-Oculist in Ordinary: Mr. H. C. Mooney. Surgeon-Dentist in Ordinary: Mr. George J. Goldie.

THE LANCET.

LONDON: SATURDAY, SEPTEMBER 16, 1916.

Acute Poliomyelitis.

THE general apprehensions felt about the possible spread of acute poliomyelitis seem to us not justified by a modern reading of the ascertained facts. The epidemic prevailing in New York City, upon which these apprehensions are grounded, began in the borough of Brooklyn on May 9th last, 20 cases appearing between that time and the end of the month. The first group of cases of sufficient size to attract attention was reported on June 8th. The investigation, started as a result of these observations, disclosed the presence of a considerable number of cases in Brooklyn which rapidly increased during the months of June, and on July 11th reached a maximum of 151 reported cases per diem. The number of cases reported from Brooklyn began to decrease following the high peak of the curve on July 11th, and on July 21st only 36 cases were reported. The number, however, again began to increase, and has ranged about a daily total of 70 per diem up to the date of the official report of August 5th. The other boroughs of the City of New York show a similar gradual rise in the number of cases, although the maxima have not been so great as in Brooklyn. The total number of cases so far reported in the City of New York is 6,531, with 1,463 deaths—a mortality the highest on record for a large epidemic of the disease, the case fatality rate being about 22 per cent.

The precautionary measures taken by the City Department of Health were very complete. There has been issued a circular dealing with the symptoms of the disease and detailing precautions to be taken to guard against its spread. Most of them refer to cleanliness of habitation and of person, but it is also advised in the report, among special injunctions, that children should not visit picture palaces or exchange kisses, but should go daily to the shower bath. Special care is enjoined in the matter of milk-supply, and all raw food is to be held suspect. Quarantine regulations have been imposed, also, on all children under 16 years of age coming from New York City, who must produce a certificate of having been recently examined, when any child not in good health will be kept in quarantine until a positive diagnosis is determined. Should the disease appear in a family, other members should be kept away from the affected person. The patient must be isolated, the authorities of the school at which the child is attending should be notified, the patient should be isolated for six weeks, and those in contact must be isolated for two weeks. The disposal of the discharge from the nose and throat, not only of the patient but those in contact, is known to be of the greatest importance, and full instructions are given that pieces of cloth should be provided, and such subsequently burned. Excreta from the bowels must be treated with boiling water for 15 minutes before being deposited in the privy vault. The throat and nose should be thoroughly cleansed with normal salt solution several times a day. Those in quarantine, as well as those affected, should also use the spray. The medical officer of health is instructed to distribute circulars on poliomyelitis to the families in which the disease exists; a placard must be posted on the house; and no patient may be moved from the place of quarantine without the permission of the health officer. In the presence of an outbreak attendance of children at public gatherings is prohibited, and special care is taken to cleanse all glasses and other containers used by the public. It is enjoined that the services of a public health nurse should be obtained to make house-to-house investigation to find early and missed cases; to assist in the care of cases especially in need; and to inspect and report the observance of quarantine. Health officers may quarantine *anyone* from *any infected* city or town, whether he is ill or not.

The gist of the regulations laid down by the New York City Department of Health is quoted at some length as indicating the extent to which the quarantine regulations have been imposed in New York City, but the lines on which public authorities in other countries will work need not be quite the same. It is admitted that it is not known how the disease is spread, and it may be thought wise under such circumstances to apply methods of quarantine which have been found of use in other diseases. But it is generally recognised that each infectious disease spreads in one way, and generally in only one way, and to prevent the extension of the disease the one avenue of its dissemination must be closed; if that avenue is efficiently closed other precautions are not only unnecessary but useless and annoying. Now, it is known that the organism exists and may persist in the nasal and pharyngeal mucous membranes for many months, and it is the secretion from these which in all probability carry the infection. If due precautions are taken with regard to these it is improbable that any spread will take place from the patient. The greater difficulty arises with regard to the "carrier," either human or animal, for though animals are not susceptible to the disease, it is by no means certain that they may not be carriers. The human "carriers" may be perfectly healthy, and it is a very difficult matter to detect these "carriers." Poliomyelitis in its distribution bears so close a resemblance to meningococcal meningitis that it would seem probable that it is disseminated in a similar manner. It is a comparatively easy matter to detect the meningococcal "carrier," and thus to

cut out the avenue of infection; but the poliomyelitic "carrier" cannot be so detected, and the quarantine methods, such as those set in motion in New York City, will not be effective in staying the spread of the infection by carriers. Poliomyelitis has been endemic in the British Islands for years. The weakness from which Sir WALTER SCOTT suffered was almost certainly due to an attack of poliomyelitis in early life; and although notification of the disease and the accurate record of cases have only been in force in London since 1911, and in the rest of England since 1912, yet the figures of individual observers for the last two decades have shown that the disease is always prevalent in the summer months of the year. In the years 1909 and 1910 several small epidemics occurred in England. During the present year the epidemic which has been reported at Aberdeen is the only one of any size, and it would seem that it has been cut short by the simple precautions adopted by the medical officer of health, Dr. MATTHEW HAY, in the early stages of the epidemic. This officer's promptitude and discrimination are worthy of all praise.

That there is a marked difference in the character of the infection in the American as compared to the British epidemic cannot be doubted. Whether this difference lies in the virulence of the organism or in the nature of the soil on which it falls, is a question yet to be answered. All the evidence points to the fact that there is a general high immunity to the disease in the British Islands. That there is a natural variation in the pathogenicity of the virus has been shown by FLEXNER, CLARK, and AMOSS, for they found that a strain of poliomyelitic virus propagated in monkeys for four years displayed during that time three distinct phases of virulence. At the outset the virulence was low, but by animal passage it quickly rose to a maximum: the maximum was maintained for about three years, when, without known changes in the external condition, a diminution set in and increased until, at the expiration of a few months, the degree of virulence about equalled that present at the beginning of the passage in the monkey. By resorting to the original specimen from which the virus was obtained a highly virulent strain was again produced. The cycle of change in virulence is correlated with the wave-like fluctuations in epidemics of diseases, which also consist of a rise, temporary maximum, and fall in the number of cases produced. The Commission of Health in New York has invited a large number of pathologists and bacteriologists to consider the disease, and to plan out a series of investigations likely to effect the solution of many problems concerned with its control. We trust that they may be successful in finding a means of preventing this disease, which is so destructive in its effects on the nervous system, and leads to such appalling results; it is certain that by coöperative action and the collation of the work of many investigators the best hope lies of satisfactory progress.

Polemical Controversy.

WE publish in another column an essay on the treatment of septic war wounds by Sir ALMROTH WRIGHT, which is a reply to what he describes as a "polemical criticism" published by Sir W. WATSON CHEYNE in the *British Journal of Surgery*. The essay should also be read in connexion with an address by Sir ALMROTH WRIGHT published in THE LANCET in April, 1915, as that address gave rise to certain of the comments which Sir ALMROTH WRIGHT considers in his present communication. The matters at issue are serious, but whether this fact justifies Sir ALMROTH WRIGHT'S chauvinistic attitude is a question upon which readers will come to different conclusions. Sir ALMROTH WRIGHT'S prefatory remarks deal with polemical controversy, and set out the reasons in his mind why he has a duty to employ phraseology which we find, for our part, regrettable. At the same time we admit that his arguments against bowdlerisation have been successful in making us decide to leave unmodified what he may consider his "best and most effective points," many of which we hold to constitute a weakness in his treatment of a theme of the first urgency. Therefore, and lest we become "dishonest" (in Sir ALMROTH WRIGHT'S sense of the word), we publish the essay as it reached us through official sources, but we should have preferred to see certain crude expressions omitted in an argument between the President of the Royal College of Surgeons of England and a famous pathologist. We must all concede that polemical controversy, whether started by a great and official authority and carried on by a leading worker in the particular field of discussion, or started by an unimportant observer and carried on by anonymous letters, has its uses sometimes in arriving at truth. But at other times, we must remember, issues may be obscured by exuberant personal reflections. "I said it very loud and clear. I went and shouted in his ear," said the hero of Humpty-Dumpty's famous recitation, but the debate ended in the most unsatisfactory manner. For such methods may lead to a frame of mind in the hearers, so that they would prefer to discontinue the controversy, even though unconvinced. Thus truth may be betrayed. A discussion upon the treatment of wounds in war is one in which many first-class observers might wish to take part. There are literally hundreds of surgeons, competent exponents of their science, who have under their hands the material for experiment and investigation, as well as the opportunities for watching and controlling the details of technique. There is a risk lest some of these workers, from whom first-hand information could be expected with confidence, may experience reluctance to commit themselves to opinions which are liable to ruthless dissection. For the joy of battle is keener in some breasts than in others. In this way an important discussion may leave behind in the tissues of pathological thought a wound that is still sluggish. Urbanity should then be tried; for whether urbanity is regarded as a saline solution or as an antiseptic paste, remarkable and prompt healing follows its employment in such situations.

Annotations.

"Ne quid nimis."

MORE ECONOMICAL ADMINISTRATION OF THE PUBLIC SERVICES.

AT the present time, when the necessity for economy in all branches of our national life is greater than ever before, a resolution, recently adopted and forwarded to the Local Government Board by the sanitary committee of the corporation of Newcastle-on-Tyne, appears to us deserving of careful consideration. It calls attention to two outstanding instances of divided responsibility which considerably embarrass the work of local sanitary committees. The first of these has reference to the anomaly whereby the control of outbreaks of small-pox is in the hands of the sanitary authority, while the guardians of the poor are responsible for the administration of the Vaccination Acts. The second relates to the complete mutual independence of the registrars of births and deaths and the local sanitary authority, despite the fact that the latter body is the one most intimately concerned with the data collected by the registrars. The Act which first put into operation the present system of gratuitous vaccination was passed in 1840, while that relating to the registration of births, marriages, and deaths came into force in 1836. In these early days there was no organised public health service, and the guardians, being the only bodies available for the local administration of such measures, were granted the powers necessary for carrying on the duties imposed upon them by the above Acts. The whole position has, of course, changed since then, but it appears to us that the suggestion in connexion with vaccination made by the above sanitary committee is only in the nature of a half-measure, because, while we agree that the sanitary authority is the proper body to be entrusted with the control of this important public health measure, we fear that public vaccination in this country will never be carried out in a satisfactory manner until the Vaccination Acts, which at present offer every facility to parents to neglect the vaccination of their children, are altered so as to render practicable the efficient administration of gratuitous vaccination. There is much to be said in favour of the second suggestion, which relates to the work of registration. At the present time information respecting births and deaths has to be obtained by the medical officer of health from the registrar, and there would be advantage if the work of the latter official were incorporated as part of the public health service and administered by the sanitary authority. Under the Registration Acts the birth of a child must be registered by the parent or guardian with the registrar, while the Notification of Births Act, which is now in force throughout the whole country, requires the father or any person attending on the mother to notify within 36 hours to the medical officer of health the occurrence of a birth. Thus the law provides that notification of all births must be sent direct to the medical officer of health, and also that births must be registered with the registrar, who in turn transmits the information to the medical officer of health. The sanitary committee of the corporation of Newcastle-on-Tyne, while realising that there may be legislative difficulties in the way of rectifying this incoördination at the present time, urge the Local Government Board to use their best endeavours so to amend the Registration and the Notification of Births Acts as to prevent the present confusion to the public and reduplication of effort, together with much avoidable clerical work to the staffs both of sanitary authorities and of registrars. They express the view that simplification of the present arrangements could not but be in the interests of both efficiency and economy, and we think there is much to be said for their contention.

ANTHROPOLOGY AT THE BRITISH ASSOCIATION.

IN seconding a vote of thanks to Sir Arthur Evans for his presidential address to the British Association, Sir Edward Schäfer described the President as a "man who had been there." It has been given to Sir Arthur Evans to discover in the island of Crete a civilisation of which the world had lost all knowledge, and yet it was one which had endured and dominated the eastern shores of the Mediterranean for a period of at least 6000 years. A man with such a record, and who is still in the fullness of late youth, has certainly been "there." His father, Sir John Evans, had also been "there"; more than any man of his time he helped to open the doors through which many have entered to explore and restore the distant past—none with greater success than his son. The names of father and son now appear in the list of the distinguished men who have presided over the British Association, which is a "record." The main aim of Sir Arthur Evans's address was to establish the place of the Minoan or ancient Cretan civilisation in the general evolutionary scheme which has culminated in the modern civilisation of Europe. He had no difficulty in proving that the culture of ancient Greece was derived from the older culture of Crete, and that Rome and modern Europe have derived the basis of their modes of life from the forgotten Minoan civilisation. Crete, in Sir Arthur Evans's opinion, is the cradle of European civilisation—both culture and "kultur." Nor had he difficulty in establishing the debt of Crete to the still more ancient cultures of the valleys of the Nile and of the Euphrates. When, however, he sought to go beyond the first beginnings of Egyptian and Babylonian settlements and to establish a connexion between them and that most wonderful phase of human life, manifested to us through the marvellous cave paintings and carvings in Spain and France—a phase of life which carries us many thousand years beyond the human beginnings on the Nile and Euphrates, he found a blank in our knowledge, one which can only be crossed by a bridge of guesses. Between those ancient palæolithic Spaniards and recent neolithic Egyptians are still worlds of missing civilisations. And it may be that medicine will play a great part in the discoveries to come. In the Anthropological Section of the British Association there were only a few papers with a direct interest for medical men, but the link between medicine and archæology was in evidence. Professor A. Keith gave an account of an elaborate comparison he had instituted between the teeth, jaws, and faces of people who had lived in England prior to the Norman Conquest and the faces of people who had lived in London during the eighteenth and nineteenth centuries. He concluded that in recent centuries the English

type of face had been profoundly modified—a modification which he attributed to the nature of our modern dietary. The change affected at least 10 per cent. of our modern population to a marked degree and about 60 per cent. of people to a slighter extent. The change did not relate only to the upper and lower jaws, to narrowing and vaulting of the palate, to irregularities of the teeth, to a more profound arrest of the eruptive capacity of the "wisdom" teeth, but affected the whole skeletal framework of the face. The malar had suffered a degenerative change more than any other bone of the face, leading to a sinking inwards of the cheeks. The orbits had opened out and become more capacious. There had also been positive changes in the ossific processes which complete the borders of the anterior nasal apertures. The face of the average English citizen had become about 5 mm. longer, and narrower to about the same extent. There was no new discovery to announce, such as the late Mr. Charles Dawson made at Piltdown a few years ago. But the anthropologists who assembled at Newcastle felt keenly his premature death. If Sir Arthur Evans revealed to the world an ancient and unknown civilisation, Mr. Charles Dawson made an even more remarkable discovery, for it was directly owing to him that we have knowledge of a very old and yet a very new kind of humanity—an unknown stage in the evolution of mankind.

VENTILATION AND THE LIGHTING ORDER.

THERE are two ways of illuminating the interior of the dwelling house after dusk has fallen. The one is by means of brilliant unshaded lights which illuminate floor, walls, and ceiling alike, and cast strong beams through the windows. The second is to concentrate the light on the work in hand and in the places where it is required. In these days economy rules out the first method quite apart from the Lighting Order of last winter, which made it illegal to squander light through the window and illumine any part of the roadway or other objects outside the house. But the Order went further and penalised also those who screened the light at its source. Dark curtains over the windows were insisted upon, and the special constable visited those who threw no light on the pavement, but whose movements could be viewed from without through open unscreened windows. The close curtaining of windows has had an effect on ventilation to which attention has as yet not been sufficiently drawn. The phthisis death-rate has been markedly higher throughout the whole of London during 1915 than for any of the preceding years. The same has been true of the general death-rate from respiratory diseases, and in an interesting preface to his annual report Dr. Sidney Davies, medical officer of health of Woolwich, attributes some part of this heightened mortality to the effects of the Lighting Order in interfering with ventilation. Fortunately, the new Lighting Order of Sept. 1st, which applies to the whole of the Metropolitan Police District, remedies this serious defect. Internal lighting must still be so reduced or shaded that not more than a dull subdued light is visible from any direction outside, and no part of the pavement or roadway or any building or object is illuminated, but the Order now permits of the securing of this gloom by screening the light at its source. Winter is coming on, and in October 6 P.M. is the time at which lighting must be reduced; on Nov. 1st the scheduled time becomes 5 P.M. It is therefore of the greatest importance that full advantage shall be taken of the new concession, so that windows may remain widely open through the long evenings and ventilation be no longer so severely compromised as it was during last winter.

VENEREAL DISEASE IN CHRISTIANIA.

WE are indebted to Dr. Yngvar Ustvedt, medical officer of health for Christiania, for a reprint of his annual report on venereal disease in Christiania. The report is short and almost exclusively statistical; the machinery of notification, treatment, and general supervision has been running for some time, and is presumably too familiar to require discussion in the present report. The information given may prove a useful standard for comparison if and when venereal disease is subjected to the same supervision in this country. The report deals with the year 1915, when altogether 2424 new cases were notified by practitioners and hospitals. The respective numbers for gonorrhœa, soft sore and syphilis (acquired) are 1549, 243, and 585. A comparison between this year and 1876 shows that the number of new cases of venereal disease annually notified has risen from 1012 to 2424, but in the same period there has been more than a corresponding rise in the population of Christiania. In fact, while in 1876 the number of cases notified represented 1·28 per cent. of the total population, this proportion has fallen to 0·96 per cent. in 1915. For syphilis alone, the figures for the two years respectively are 0·53 and 0·25 per cent. This is all to the good, but it would be interesting to know how Dr. Ustvedt accounts for this big fall in the incidence of syphilis, and whether he considers these figures a true index to the comparative frequency of syphilis then and now. Evidently the latest methods of diagnosis and treatment cannot be credited with this improvement, for during the last few years Dr. Ustvedt's tables show little or no improvement. In 1906, for example, there were 0·82 cases of venereal disease and 0·21 of syphilis for every 100 inhabitants. The report gives the number of cases in which the machinery of the law was invoked and the number of convictions (7) secured against women who had wittingly exposed others to infection. Six cases of re-infection with syphilis in men who had been treated with salvarsan were included among the notifications of new cases.

THE EFFECT OF THE WAR ON MENTAL HEALTH.

THE annual report of the Belfast Lunatic Asylum for the year 1915, which has just been issued, shows a slight increase in the number of admissions (a total of 232) as compared with 220 for the year 1914, although both figures are markedly below the average for the past ten years. Of the 114 patients discharged during the year, 81 were recoveries. These figures have provided the material for the many interesting speculations raised in the report. Is it, or is it not, a fact that insanity, like crime, has really lessened during the war—in other words, is the decrease actual or real? Curiously, in the Belfast Asylum it is among women that the

greatest diminution is seen. What effect will the war have on the general mental health? The view is put forth that owing to the shifting of the distribution of wealth, many of those living in poverty now will, owing to better wages, have greater relative wealth and luxury, and consequently greater leisure, more education, and as a result less tendency to indulgence in drink. So far experience in the district supplied by the Belfast Asylum does not accord with this speculation; here more money is, it is alleged, being spent in drink with the present increased wages. Further, have increased wages increased real wealth, and have they not been balanced by the higher prices? Why is it that the worry has not produced among women, whom this war has forced to the greatest economy to make ends meet, a greater amount of insanity? Further, will the increased amount of work now done by munition workers not tend to increase mental troubles? We do not see that temperance reform will be advanced unless the State decides to lessen the opportunities for drinking, as has already been done during this war in France and Russia.

SCIENCE IN NATIONAL SERVICE.

A scientific worker, who has been for many years prominently engaged in industrial and commercial research, writes to us in connexion with our leading article under this heading last week, pointing out that, while coöperation between the academic work of the university and the practical work of the factory is most desirable, it is not easy of attainment. For, he says, few students encounter practical problems until they reach the factory, where utilitarian research begins. That is a reproach to this country that cannot be levelled with the same significance against Germany or America. It is in this respect that we have been left behind in the commercial race, and no need for the institution of the Committee of the Privy Council for Scientific and Industrial Research would have arisen if our manufacturers had adopted a policy of employing men of suitable attainments for placing a manufacturing business on a scientific and productive basis. The attitude of our manufacturers is well shown in one case quoted by the Committee of the Privy Council in which the managing director of a manufacturing firm told the Committee that he had no interest in research which did not produce results within a year. The average man wants quick returns, he cannot afford to wait, and only when Science can help him to overcome the difficulties which cross his path from day to day does he welcome her. The important work which our universities have done in contributing to the sum of human knowledge is, of course, well recognised, but a not inconsiderable share of research work has been successfully accomplished altogether outside the pale of the academy. The great industries controlling the output of dyes, synthetics, and common soda were built up in the factory and not in the university. Faraday's great discovery—and the whole vast development of electric power is its outcome—was due to no university training. Greater facilities for scientific training are needed and many more men are required to equip themselves with that technical knowledge which can alone lift our industries out of an unscientific and unsatisfactory position. To this end the universities and the factories should, in our opinion, work together, and the difficulties must be faced. It is mainly a question of money—endowment must be found for academic teaching, and proper salaries must be paid by manufacturers to their well-trained employees.

ANAEROBIC PYOGENIC BACTERIA.

Dr. F. Putsu claims to have isolated from a case of compound fracture of the femur with gas gangrene a pure culture of a definitely anaerobic bacterium having special characteristics and named by him bacillus putrificus, var. non-liquefaciens (*Il Policlinico*, Surgical Section, August 15th, 1916). This bacillus is evidently a micro-organism from the soil, definitely anaerobic, capable of producing putrid decomposition with development of gas and formation of pus in tissues previously injured; in fact, it is one of the germs which are the cause of gas gangrene and gas phlegmon. In cultures all the organisms showed the presence of a spore, were ovoid or club-shaped, with the spore at one extremity. They were mobile, with a rectilinear movement which ceased at the edge of the hanging drop where they were in contact with air. With Ziehl's stain the spore was unstained or nearly so, the body of the organism taking a deep red. With Gram's method, using eosin as a differential stain, young forms of recent growth in broth took a red-violet hue. The red part constituted the body of the bacillus, while the violet represented the edge or membrane of the spore. Elongated non-spore-bearing forms sometimes met with in recent cultures were Gram-negative. Aerobic cultures in broth, broth glucose, or agar remained completely sterile. The organism described by Dr. Putsu to some extent resembled the B. lactopropylbutyricus non-liquefaciens of Tissier but differing from it in the following particulars: in not having a central spore, in the absence of spore in elongated forms, in forming irregular broken colonies, and in coagulating milk without the aid of glucose.

THE LONDON SCHOOL OF MEDICINE FOR WOMEN.

THE extension of the London (Royal Free Hospital) School of Medicine for Women, which is to be opened on Oct. 2nd by the Queen, makes this medical school one of the largest in the metropolis. Part of a new half-basement is used for an extension of the physics laboratories, and bears the name of the "Consuelo Duchess of Marlborough" department. It includes a physics lecture-theatre, lecturers' research-room, and rooms specially prepared for experimental work on light. The pathological research department, in connexion with the new pathological department of the hospital, is also housed on this floor. The ground floor is connected with the students' common room in the main block in Hunter-street by a colonnade and open court, forming the northern end of the main quadrangle. A fine panelled Union Room, for the use of the clubs and societies of the Students' Union, adjoins the colonnade. The "Maude du Cros" organic chemistry laboratory and a chemical research laboratory fill the remaining space on this level and connect with the present inorganic chemistry department. The whole of the first floor is occupied by an extension of the physiological department. This

building is a memorial to the late Dr. Julia A. H. Cock, dean of the school from 1903 to 1914, whose name is inseparably associated with the advance of the position of women in medicine. The second floor is an extension of the anatomical department, including a dissecting room, preparation rooms, demonstration theatre, and research laboratories. The £30,000 required to build and equip this extension have been subscribed in response to an appeal first issued by the council on Dec. 10th, 1914. It is now possible to give a complete course of medical instruction at the school, including the clinical course which is pursued at the Royal Free Hospital and, under a temporary agreement, at St. Mary's Hospital, to 450 students, providing for an entry of 90 new students each year. The architects for the extension and alterations are Messrs. H. V. Ashley and Winton Newman, and the buildings will be ready for occupation at the opening of the October session.

PENALTIES FOR MALINGERING AND SELF-MUTILATION.

THE new Defence of the Realm Regulations, just issued, deal with the cases of those who attempt to avoid military service by self-drugging or self-mutilation. The following are the two regulations upon these points:—

If any man of His Majesty's Reserve forces not for the time being subject to the Naval Discipline Act or to military law, when under orders to report himself for medical examination, malingers or feigns any disease or infirmity, he shall be guilty of an offence against these regulations.

If any such man produces any disease or infirmity in himself, or maims or injures himself, or causes himself to be maimed or injured, or takes or uses any drug or preparation, or does any other act calculated or likely to render him, or to lead to the belief that he is permanently or temporarily unfit for service, he shall be guilty of an offence against these regulations, unless he proves that he did not so act with the intent of escaping service.

It is an offence also to assist an intending malingerer by producing in him any mutilation or by supplying him with drugs.

THE ancient barony of Cobham has been revived, and a writ has been issued to Dr. Gervase Disney Alexander summoning him to the House of Lords under this style. It will be remembered that the claim to the peerage was established some four years ago before the Committee of Privileges by Dr. R. G. Alexander, Dr. G. D. Alexander's father, and a well-known Halifax physician.

CHILD-WELFARE SCHEME IN DUNDEE.—Dr. C. Templeman, city medical officer of health for Dundee, has submitted a scheme for dealing with infant and child welfare, on the lines suggested by the Local Government Board, which has been adopted by the Dundee health committee. The scheme will be carried out by the inspector of midwives, under the supervision of the medical officer of health. It provides for all homes, where it is deemed advisable, being visited by one or other of the five health visitors, who shall keep the child under observation during its first year of life. In this work help is anticipated from voluntary workers of the Social Union. The medical officer of health has further been empowered to engage the services of trained nurses in connexion with epidemics of measles and whooping-cough. They will visit the homes and guide the mothers as to steps necessary to prevent complications and the spread of the diseases. Four infants' clinics are to be instituted, and for children under 5 a special children's medical clinic will be held twice a week at the Royal Infirmary, while surgical cases will receive daily attention at the out-department. The scheme will provide a health record of all children, and will be supplemented as regards infectious diseases by the records kept by the public health department. This record will then be sent to the school medical officer when the child passes under his supervision

THE GROUND-LEVEL LATRINE.

BY F. E. FREMANTLE, F.R.C.S. ENG., F.R.C.P. LOND., D.P.H.,
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UNDER the conditions of service on the Gallipoli Peninsula the shallow-trench latrine was found inappropriate. It requires the use of acres of ground, and sufficient safe ground could not be spared. Moreover, the squatting position is torture for men afflicted with diarrhœa and straining for long periods at stool. Nor was the superficial covering of earth sufficient protection against the fly-pest, for maggots were found swarming up through the sparse covering in the hot weather. Nor, again, was the soil in the hot weather likely to be of much bacterial value in breaking up the fæces. Finally, in practice, these shallow trenches, especially in the dark, constantly pollute the men's boots. The methods employed in Gallipoli to counterbalance these evils may prove useful in other fields of activity.

The choice lay between the deep-trench and the pail system. In some places, as in certain front trenches with no appropriate ground handy for deep-trench latrines, pails in the form of biscuit-tins or oil-drums were instituted. But they involved much extra labour, exposure, and danger in porterage to and fro, with manifold occasions of pollution in the process. Rough mule-carts bumping over rough tracks, with much man-handling at either end and only rare facilities for hand washing, made the process both unwholesome and unpleasant. The intermediate stage of fæcal disposal was therefore abandoned and the fæces deposited direct by the sitter into the midden or deep trench.

The next development was that made by the Australians at Anzac in their confined Lone Pine trenches and elsewhere of (1) narrowing the mouth of the deep trench to 15 or 18 inches, widening it below, splaying it out at the ends, and deepening it to 10, 15, and even 18 feet deep, and (2) closing it completely in. This made the utmost possible use of the space available in a sap, even though it had to be hewn out of rock; and with proper addition of cresol, crude oil, and so-called chloride of lime it was unobjectionable and quite free from flies. But when it came to fly-proofing the deep-trench latrine in the open, with its pole supported on trestles or sandbags, the difficulty without skilled carpenters or tools or timber was almost insuperable. The only material available consisted of biscuit-boxes and their tin linings, with other supply cases, all urgently required for the improvisation of rough furniture or fuel. It became essential to economise material as well as space and labour in the construction of latrines.

The following modification of the deep trench became, therefore, a necessary and fairly obvious improvement on the official "long and deep trench" of pre-war days. The principle should, it is suggested, be adopted universally, officially, and exclusively for the sealed-pattern deep latrine.

The principle is that the latrine-pole is flush with the ground. The user then sits level with the ground, with his feet in an extra "accommodation trench" sunk in front of the pole for the purpose. This has three advantages:—

1. He has an extra 18 inches of protection—a most important matter when latrines are in a sap, or, if in the open, necessarily in the more exposed positions.

2. There is only one flat plane to cover in, instead of the top, back, front, and two irregular ends, where the trestle or tin or earth-bag supports for the pole make covering-in difficult.

3. Simplicity of construction and saving of material.

The need of covering-in arose partly as a guard against the propagation of flies, but chiefly from the desire to reduce latrine digging and to economise ground, for which purpose it seemed best to dispense with the throwing in of earth to the latrine. The danger of infection is then met by:—(1) The darkness of a really deep closed latrine, which flies avoid; (2) the imprisonment of the paper which cannot be blown out of a closed latrine; (3) the use of disinfectants; and, finally, by (4) the necessary

filling in of the trench when it is full up to the level of the accommodation trench.

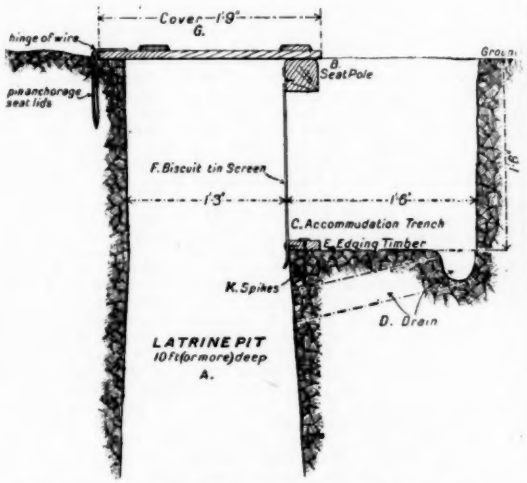
The following specification is made out in the simplest form. The whole is the result of actual experience, which was most satisfactory. It can, of course, be varied and developed to any extent according to local conditions, material and labour available. As it stands it requires the minimum of timbering and skilled carpentering.

SPECIFICATION FOR CONSTRUCTION OF LATRINE FOR SIX MEN.

A. *Latrine pit.*—9 ft. long, 1 ft. 3 in. wide at top, 4 ft. wide at bottom, and 10 ft. deep. The 1 ft. 3 in. breadth is widened gradually to 3 ft. or 4 ft. at bottom, according to soil. All sides are smoothed off and ends sloped gently outwards in digging down. In sand, sides of pit must be vertical and revetted by sand-bags.

B. *Recess at each end to take 6 in. of pole* immediately in front of trench; top of pole—10 ft. by 3 in. by 3 in.—to be flush with the ground and supported on *piece of board* let into side of trench.

C. *Front of trench* to be cut away along whole length for further width of 1 ft. 6 in. (making 2 ft. 9 in. in all from rear wall of trench) to depth of 1 ft. 6 in. as an accommodation trench.



D. *Two steps* (not shown on figure) down at either end of accommodation trench each 9 in. deep, 1 ft. wide.

Drain to accommodation trench 3 in. by 3 in. along front of floor; to drain into end corners of latrine by sunk pipe made of small tins end to end.

E. *Edging timber* 3 in. by 1 in. to be fixed by long spikes (K) into top of front wall of latrine pit, to lie flat on the ground below the latrine pole at distance of 14 in.

F. *Biscuit-tin sheets* to be nailed continuously, so as slightly to overlap, to hinder surface of latrine pole and to hinder edge of edging timber.

To support seat covers, seven strips of wood (not shown on figure) 1 ft. 9 in. long and 3 in. wide to be fixed, one at either end and five at equal intervals, across top of trench from surface of pole in front to surface of ground behind (let in, flush, in each case) by means of nails provided.

G. *Six seat covers*, made of wood, or of wooden frames covered with sacking, or of tin-sheeting, 1 ft. 9 in. by 1 ft. 3 in., to be hinged by two wires (H) to hairpin anchorages (I) in ground behind.

Materials provided.—Material provided by the R.E.: (B) Latrine poles, 10 ft. by 3 in. by 3 in. (E) Edging timber, 10 ft. by 3 in. by 1 in. (K) Spikes, 6. (F) Nails, ½ lb. (I) Hairpins, 10. (H) Wire, 3 yards.

Material found by unit: (B) Two pieces of wood each 9 in. by 3 in. (D) Six cigarette-tins or burnt milk tins, with ends cut out. (F) Biscuit-tin sheeting. The sides of 8 tins, 5 for front sheeting, two sides of a tin to each sheet, making 10 sheets; 3 for covers to be shaped and rivetted or soldered by the R.E. (G) Six strips of wood, e.g., from biscuit boxes, each 1 ft. 9 in. by 3 in.

N.B.—Lettering refers to attached specification.

(D) Drain turns round one end of accommodation trench, is piped out of old cigarette, milk, or jam tins, and passing under the edging timber empties into one end of the latrine pit.

(G) Covers must be made so as to fall forward again when the user rises from the seat. During use they rest against his back. In a sap, the cover is hinged into the back wall and so can not remain open. In the open, a stake in the ground between the hinges ensures automatic closing.

(H) Hinge may be of wire or leather if metal hinges are not obtainable. If possible, an edging of timber is fixed behind, on to which the covers are hinged.

The idea of a ground-level latrine was made by Captain J. F. Hosken, R.A.M.C. (T.), attached 4th Norfolk Regiment, 163rd Brigade. The details are the joint conclusion of the Divisional R.E. and the present writer.

MEDICINE AND THE LAW.

An Apprentice and the Danger of Infection.

AN apprentice, who was recently summoned at the Old-street police court to show cause why he should absent himself from his work, raised two defences. In the first place, he claimed that he was engaged in making boxes for munitions of war, and in the second he alleged that his master, now an inmate of the Brompton Hospital, was suffering from tuberculosis and was in the habit of spitting upon the floor of the workroom and among the materials which he had to handle, so that he was afraid of infection. The magistrate accepted the first point raised and adjourned the case *sine die* on the ground that the lad was doing war work; otherwise it would have been interesting to see what the decision would have been, assuming the allegations above mentioned to have been proved satisfactorily.

An Unusual Case of Impersonating a Medical Practitioner.

At the recent session of the Central Criminal Court an unqualified person named Thomas Coffey pleaded guilty to the charge of giving a death certificate. His career as a pretended medical man was of an unusual character. Having studied for the medical profession and passed his first and second examinations, he failed to pass his final examination and made no further attempt to do so. He went instead to Swansea and obtained the post of assistant to a medical practitioner there by assuming the name of a medical man, Mr. W. J. Greehy, who at one time was assistant to his (the prisoner's) brother. He was able to practise as Dr. Greehy for several years, during which time he appears to have borne a good character and to have become popular in the district where he lived. Although it may be suggested that detection would have followed if any one had consulted the Medical Directory and made any inquiry as to why his address in it did not correspond with that at which he practised, he not only was not discovered when in civil life, but was able to join the Royal Army Medical Corps in August, 1915. Early in 1916 the real Mr. Greehy applied also for a commission, when the similarity of name and initials was noticed and the fraud was detected. A sentence of six months' imprisonment in the second division was passed, the Recorder expressing himself as puzzled to understand why the prisoner should have entered upon such a career instead of sitting again for his final examination.

A Quack Convicted of Manslaughter.

A man named Harry Burdee, 59 years of age, who was stated to have conducted an orchestra at Greenock for 20 years, but who had had no medical training, was convicted of manslaughter before Mr. Justice Low at the recent session of the Central Criminal Court. A woman whom he undertook to treat medically died in consequence, the evidence showing that, without making any examination of her heart, he ordered her to abstain from all food, which she did for three days, and to sip cold water, besides undergoing other "treatment." Dr. B. H. Spilsbury gave evidence, based upon post-mortem examination, that death was caused by heart failure due to disease of the heart, accelerated by flatulence and lack of food. He explained to the jury that abstention from food would further weaken her already feeble heart, and pointed out that even if the treatment as described, including the use of a wet pack, were assumed to have been likely to do good to the patient, a medical man would not have prescribed them without first ascertaining the condition of the heart. The prisoner was convicted and sentenced to 12 months' hard labour, Mr. Justice Low describing him as a dangerous and ignorant quack, and informing him that he had escaped penal servitude only through the jury recommending him to mercy, and because he was not shown to have robbed his victims. The prisoner himself stated that though he had treated patients for some time he had only recently taken fees of 3*s.* per visit from them. As it is very seldom that even a dangerous and ignorant quack is charged with manslaughter when his victim dies, and still more seldom that he is convicted, it is of interest to note that in this instance the verdict was due to the fact that it was possible to prove that there was criminal negligence. If the prisoner had merely undertaken to treat a patient who stood in need of medical care, and she had died in his hands, he would probably have gone entirely unpunished.

THE SERVICES.

ROYAL NAVAL MEDICAL SERVICE.

William H. Du Pré to be temporary Surgeon.

ARMY MEDICAL SERVICE.

Colonel J. C. Morgan is placed temporarily on the half-pay List on account of ill-health.

Lieutenant-Colonel E. M. Pilcher, D.S.O., R.A.M.C., to be Brevet-Colonel.

ROYAL ARMY MEDICAL SERVICE.

Lieutenant-Colonel A. T. I. Lilly is retained on the Active List under the provisions of Arts. 120 and 522 Royal Warrant for Pay and Promotion, and to be supernumerary.

Temporary Captain R. R. K. Paton to be local Major whilst employed on embarkation duties.

Temporary Captain W. J. Stewart relinquishes his commission on account of ill-health.

Temporary Captains relinquishing their commissions: A. N. Clemenger, M. D. Eder, and J. Mills.

Temporary Lieutenants to be Temporary Captains: A. J. V. McDonnell, J. Brunton, R. W. Ironside (late Lieutenant, R.A.M.C., T.F.), J. B. Butler, W. Browne, B. D. Crichton, D. Craig, W. P. MacKasey, A. M. Watts, W. L. Clements, and L. J. Weatherbe (late Surgeon-Captain, Paget's Horse).

Temporary Lieutenants relinquishing their commissions: W. S. Macdonnell, E. D. Wolff, A. H. Style, G. W. Middlemiss, P. Rendall, A. R. McLachlan, and J. G. Waine.

To be Temporary Lieutenants: P. E. el Howie, W. S. Angus, E. A. S. Shaw, F. M. P. Rice, C. H. Brookes, C. I. Stockley, F. Corner, A. S. Dawson, G. H. Baird, A. Jervis, J. Dulberg, R. Haslam, W. Craik, E. O. Marks, J. Lindsay, D. C. Druitt, M. C. Gardner, H. Greenwood, Temporary Honorary Lieutenant R. H. Maingot, Temporary Honorary Lieutenant H. G. E. Williams, Temporary Honorary Lieutenant A. G. Morris, E. Evans, H. L. Cronk, C. D. Pile, J. B. Whitfield, J. M. Jarvie, T. A. Matthews, O. H. Woodcock, J. W. Gill, F. W. Murray, R. M. Coalbank, A. S. Paterson, R. J. Wilson, W. E. Morgan, J. M. Hall, E. J. Fitzgerald, H. G. Ramsbottom, J. D. Judson, T. S. Forrest, W. E. Bramley-Moore, J. Maclean, W. S. Badger, S. Gooding, H. M. L. Crawford, J. Goss, A. Kinsey-Morgan, J. J. Anning, H. A. Fenton, W. R. Wiseman, C. H. Bryan, S. J. Yeates, J. M. Adams, J. H. C. Thompson, J. Fraser, S. J. Moore, A. D. Campbell, R. N. West, W. S. McDougall, H. North, J. T. Bailey, E. Fullerton, D. F. Borrie, Temporary Honorary Lieutenant D. G. C. Tasker, J. C. Walker, F. H. W. Brewer, G. E. A. Petrie, R. A. Shekleton, D. M. M. Ross, C. A. Harrison, Temporary Honorary Lieutenant E. E. Lightwood, J. J. Ryan, E. G. Fearnsides, J. R. Frost, T. G. Maitland, H. F. Woods, T. Stordy, A. Duguid, M. J. Horgan, J. E. Richards, G. F. Longbotham, W. C. Lattey, R. S. Barker, R. C. Smith, W. L. Johnson, F. W. Grant, C. Tylor, H. S. Brown, W. Garstang, J. E. Barnes, P. Henderson, Temporary Honorary Lieutenant W. M. Crombie, Temporary Honorary Lieutenant S. Hutchinson, J. B. McCutcheon, W. Dunn, T. D. H. Holmes, Temporary Honorary Lieutenant T. Jackson, H. S. Banks, Temporary Honorary Lieutenant A. J. Bado, F. G. Bergin, F. C. Drew, E. H. Dendy, and H. L. de Caux.

To be temporary Honorary Lieutenants: J. Fanstone, H. C. Shockett, S. Morris, and W. Simpson.

SPECIAL RESERVE OF OFFICERS.

Royal Army Medical Corps.

The undermentioned to be Lieutenants:—E. G. Fishe (from University of Dublin Officers Training Corps), D. Colombos, H. T. Lamb, B. J. Daunt (from the Royal College of Surgeons in Ireland Officers Training Corps), and G. L. Maule (from Manchester University Officers Training Corps).

TERRITORIAL FORCE.

Royal Army Medical Corps.

Third Home Counties Field Ambulance: Captain S. Hughes, from Attached to Units other than Medical Units, to be Captain.

Home Counties Casualty Clearing Station: Captain J. J. C. Hamilton, from a Field Ambulance, to be Captain.

Home Counties Field Ambulance: W. C. D. Maile to be Lieutenant.

London Field Ambulance: J. R. Clark and G. Thomson to be Lieutenants.

London General Hospitals: The undermentioned officers are seconded for duty with a General Hospital: Lieutenant-Colonel H. E. B. Bruce-Porter and Captains A. H. Gosse, V. Z. Cope, G. Finch, S. H. Warren, C. E. H. Milner, J. A. Willett, G. W. Shore, C. E. W. McDonald, P. G. Doyne, L. G. Crossman, and L. N. Reece

Attached to Units other than Medical Units.—Major J. G. Macindoe relinquishes his commission on account of ill-health. Lieutenant M. Thompson to be Captain.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN the 96 English and Welsh towns with populations exceeding 50,000 persons at the last Census, 7702 births and 3936 deaths were registered during the week ended Saturday, Sept. 9th. The annual rate of mortality in these towns, which had been 10·5, 10·9, and 11·6 per 1000 in the three preceding weeks, further rose in the week under notice to 11·9 per 1000 of their aggregate civil population, estimated at 17,312,295 persons for the year 1915. During the first ten weeks of the current quarter the mean annual death-rate in these towns averaged 11·0, against 10·7 per 1000 in London. Among the several towns the death-rate last week ranged from 4·6 in Wimbledon and in Gillingham, 5·4 in Wakefield, 5·5 in Eastbourne, 6·2 in Barnsley, and 7·1 in Swindon, to 18·1 in St. Helens and in West Hartlepool, 18·9 in Bootle, 19·4 in Gateshead, and 20·0 in Hastings.

The 3936 deaths from all causes were 81 in excess of the number in the previous week, and included 580 which were referred to the principal epidemic diseases, against numbers steadily increasing from 212 to 511 in the seven preceding weeks. Of these 580 deaths, 457 resulted from infantile diarrhœal diseases, 47 from diphtheria, 37 from measles, 28 from whooping-cough, 7 from enteric fever, and 4 from scarlet fever, but not one from small-pox. The annual death-rate from these diseases was equal to 1·7, against 1·5 per 1000 in the previous week. The deaths of infants (under 2 years) from diarrhœa and enteritis, which had increased from 46 to 388 in the seven preceding weeks, further rose to 457, and included 105 in London, 60 in Liverpool, 21 in Leeds, 17 each in Birmingham and Hull, 15 in Birkenhead, 14 each in West Ham and Manchester, and 13 in Bootle. The deaths referred to diphtheria, which had been 45, 21, and 27 in the three preceding weeks, rose to 47; 9 deaths belonged to London, 4 to Manchester, and 3 each to Liverpool, St. Helens, and Cardiff. The fatal cases of measles, which had been 55, 44, and 50 in the three preceding weeks, fell to 37, of which 13 occurred in London, 4 in Sheffield, and 3 in Liverpool. The deaths attributed to whooping-cough, which had declined from 34 to 24 in the four preceding weeks, rose to 28, and included 4 in Hull and 3 each in London, Liverpool, Manchester, and Sheffield. The deaths referred to enteric fever, which had been 12, 5, and 7 in the three preceding weeks, were again 7 last week, but showed no excess in any particular town. The fatal cases of scarlet fever, which had been 6, 12, and 15 in the three preceding weeks, fell to 4, which were recorded in Liverpool, Bootle, Blackpool, and Aberdare respectively.

The number of scarlet fever patients under treatment in the Metropolitan Asylums Hospitals and the London Fever Hospital, which had declined from 1221 to 1000 in the six preceding weeks, further fell to 990 on Saturday last; 142 new cases were admitted during the week, against 98, 111, and 145 in the three preceding weeks. These hospitals also contained on Saturday last 1265 cases of diphtheria, 132 of measles, 96 of whooping-cough, and 37 of enteric fever, but not one of small-pox. The 912 deaths from all causes in London were 29 more than in the previous week, and corresponded to an annual rate of 11·0 per 1000. The deaths referred to diseases of the respiratory system, which had declined from 99 to 66 in the five preceding weeks, rose to 78 in the week under notice.

Of the 3936 deaths from all causes in the 96 towns, 153 resulted from violence, 296 were the subject of coroners' inquests, and 1180 occurred in public institutions. The causes of 38, or 1·0 per cent., of the total deaths were not certified either by a registered medical practitioner or by a coroner after inquest. All the causes of death were duly certified in Manchester, Bristol, West Ham, Bradford, Newcastle-on-Tyne, and in 71 other smaller towns. Of the 38 uncertified causes, 7 were registered in Liverpool, 6 in Birmingham, 5 in Gateshead, and 2 each in London, Gillingham, and South Shields.

HEALTH OF SCOTCH TOWNS.

In the 16 largest Scotch towns with an aggregate population estimated at 2,372,000 persons at the middle of this year, 1038 births and 651 deaths were registered during the week ended Saturday, Sept. 2nd. The annual rate of mortality in these towns, which had been 12·2, 11·7, and 11·7 per 1000 in the three preceding weeks, rose to 14·3 per 1000 in the week under notice. During the first nine weeks of the current quarter the mean annual death-rate in these towns averaged 12·2, against a corresponding rate of 10·9 per 1000 in the large English towns. Among the several towns the death-rate during the week ranged from 6·2 in Motherwell, 7·7 in Falkirk, and 8·4 in Kilmarnock, to 15·9 in Leith, 20·1 in Greenock, and 24·4 in Perth.

The 651 deaths from all causes were 119 in excess of the number in the previous week, and included 88 which were referred to the principal epidemic diseases, against 48 and 68 in the two preceding weeks. Of these 88 deaths, 61 resulted from infantile diarrhœal diseases, 9 from diphtheria, 8 from measles, 4 from enteric fever, and 3 each from scarlet fever and whooping-cough, but not one from small-pox. The annual death-rate from these diseases was equal to 1·9, against 1·5 per 1000 in the large English towns. The deaths of infants (under 2 years) from diarrhœa and enteritis, which had increased from 7 to 52 in the six preceding weeks, further rose to 61, and included 51 in Glasgow and 3 in Edinburgh. The 9 deaths referred to diphtheria were 5 in excess of the average in the earlier weeks of the quarter, and included 3 in Edinburgh and 2 each in Glasgow and Aberdeen. The fatal cases of measles, which had been 8, 4, and 5 in the three preceding weeks, rose to 8, and comprised 4 in Glasgow, 3 in Leith, and 1 in Clydebank. Two of the 4 deaths from enteric fever occurred in Glasgow and 2 in Greenock. The deaths attributed to whooping-cough, which had been 11, 7, and 4 in the three preceding weeks, were 3 in the week under review, and were registered in Aberdeen, Leith, and Coatbridge respectively. The 3 fatal cases of scarlet fever, of which 2 were recorded in Dundee and 1 in Glasgow, were 2 below the average in the earlier weeks of the quarter.

The deaths referred to diseases of the respiratory system, which had been 61, 61, and 54 in the three preceding weeks, rose to 57 in the week under notice, and were 1 above the number registered in the corresponding week of last year. The deaths from violence numbered 27, against 27 and 32 in the two preceding weeks.

In the 16 largest Scotch towns 1015 births and 595 deaths were registered during the week ended Saturday, Sept. 9th. The annual rate of mortality in these towns, which had been 11·7, 11·7, and 14·3 per 1000 in the three preceding weeks, fell to 13·1 per 1000 in the week under notice. During the first ten weeks of the current quarter the mean annual death-rate in these towns averaged 12·3, against a corresponding rate of 11·0 per 1000 in the large English towns. Among the several towns the death-rate last week ranged from 4·2 in Kilmarnock, 5·1 in Kirkcaldy, and 6·6 in Aberdeen to 16·0 in Coatbridge, 17·4 in Dundee, and 17·8 in Leith.

The 595 deaths from all causes were 56 less than the number in the previous week, and included 83 which were referred to the principal epidemic diseases, against numbers increasing from 36 to 88 in the five preceding weeks. Of these 83 deaths, 56 resulted from infantile diarrhœal diseases, 10 from measles, 6 from diphtheria, 5 each from scarlet fever and whooping-cough, and 1 from enteric fever, but not one from small-pox. The annual death-rate from these diseases was equal to 1·8, against 1·7 per 1000 in the large English towns. The deaths of infants (under 2 years) from diarrhœa and enteritis, which had increased from 7 to 61 in the seven preceding weeks, declined to 56, and included 45 in Glasgow, and 2 each in Edinburgh, Dundee, and Greenock. The deaths referred to measles, which had been 4, 5, and 8 in the three preceding weeks, further rose to 10, of which 7 were registered in Glasgow. The 6 fatal cases of diphtheria were slightly in excess of the average in the earlier weeks of the quarter, and included 3 in Glasgow. The deaths attributed to scarlet fever, which had been 4, 7, and 3 in the three preceding weeks, rose to 5, and comprised 4 in Glasgow and 1 in Clydebank. The deaths referred to whooping-cough, which had declined from 11 to 3 in the four preceding weeks, rose to 5, of which 2 were recorded in Glasgow, 2 in Dundee, and 1 in Leith. The fatal case of enteric fever was registered in Leith

The deaths referred to diseases of the respiratory system, which had been 61, 54, and 57 in the three preceding weeks, fell to 45 in the week under notice, and were 20 below the number registered in the corresponding week of last year. The deaths from violence numbered 25, against 32 and 27 in the two preceding weeks.

HEALTH OF IRISH TOWNS.

In the registration district of Dublin 219 births and 113 deaths were registered during the week ended Saturday, Sept. 9th. The annual rate of mortality, which had been 16·4, 14·4, and 19·3 per 1000 in the three preceding weeks, fell to 14·8 in the week under notice, against 11·0 and 14·2 per 1000 in London and Glasgow respectively.

The 113 deaths at all ages included 29 of infants under 1 year, and 17 of persons aged 65 years and upwards. Twenty-six deaths (of infants under 2 years) were referred to diarrhœal diseases, and 1 each to measles and whooping-cough. The causes of 5 deaths were uncertified, and those of 2 others were the subject of coroners' inquests, while 36, or 32 per cent., of the total deaths occurred in public institutions.

During the same period 177 births and 100 deaths were registered in the city of Belfast. The deaths corresponded to an annual rate of 13·4, or 2·2 per 1000 less than in the previous week, and included 20 of infants under 1 year and 21 of persons aged 65 years and upwards. Seventeen deaths (of infants under 2 years) were referred to diarrhœal diseases, 2 to enteric fever, and 1 each to measles, scarlet fever, and whooping-cough. The cause of one death was uncertified, and one inquest was held, while 25 of the total deaths occurred in public institutions.

Obituary.

WALTER LEY WOOLLCOMBE, F.R.C.S.EDIN., M.R.C.S., L.R.C.P. LOND.,

HONORARY SURGEON TO THE SOUTH DEVON AND EAST CORNWALL HOSPITAL, PLYMOUTH.

Mr. W. L. Woollcombe died at his residence in Plymouth on August 30th, in his fifty-second year. He was the son of Mr. W. Woollcombe, solicitor, of Plymouth, and received his medical education at St. Bartholomew's Hospital, qualifying M.R.C.S., L.R.C.P. Lond. in 1886. Five years later he was admitted F.R.C.S. Edin., and after holding resident appointments at the South Devon and East Cornwall Hospital he was appointed on the honorary staff of that charity, to which at the time of his death he was surgeon. He was also consulting surgeon to the Tavistock Cottage Hospital and St. Barnabas Cottage Hospital, Saltash. As president of the Plymouth Medical Society in 1902 he delivered an important address on the Early Recognition of Cancer. Last year he was president of the South-Western Branch of the British Medical Association. Mr. Woollcombe did not write much, but his articles in our columns and other journals were marked by critical surgical acumen. He was a major in the Royal Army Medical Corps, attached to the 4th Southern General Hospital, where he devoted much of his time to the creation of a massage department, which, owing to his untiring energy and forethought, soon became an established treatment centre. Mr. Woollcombe was an accomplished surgeon and a valued colleague, and his early death leaves a gap which is keenly felt among friends and patients.

Mr. George F. Aldous writes:—

"As a friend and colleague for 30 years of the late Walter L. Woollcombe, I feel that I am entitled to allude to the irreparable loss to the profession in the West of England, and particularly to the counties of Devon and Cornwall. We were fellow students together at St. Bartholomew's Hospital in the early 'eighties,' and met again in 1887 at Plymouth, where Woollcombe was house surgeon to the South Devon and East Cornwall Hospital. He rose rapidly through the stages of assistant surgeon and full surgeon, becoming senior member of the surgical staff on the retirement of Mr. Paul Swain. As his assistant at the hospital and in his private operative practice I was witness of his skill in overcoming the difficulties which presented during the course of an operation; in technique he was faultless, and the care and thought bestowed on each case was worked out to mathematical precision. He was a rapid, neat operator, with the gift of knowing what to do in difficulties. He was at his best in abdominal surgery, and many patients owe their lives to his surgical accomplishment. The last operation he performed was excision of the cæcum for malignant disease in a medical man, and although he was himself in severe pain during the whole of the operation he went through it to the end without omitting the smallest detail, the result being completely successful. During the last few months of his life he suffered much, but stuck to his work, and did not give in until nearly the end, setting a fine example of pluck. Woollcombe was a thorough sportsman, a good shot, a keen fisherman, and an enthusiast at golf. His colleagues keenly feel their loss."

THE LATE DR. L. VERNON-JONES.—Mr. Lanphier Vernon-Jones, B.A., M.D., L.M. Dub., who died at Bletchingley on Sept. 8th in his fifty-third year, had been resident medical officer to the Adelaide Hospital in Dublin and was a member of the Council of the London and Counties Medical Protection Society.

The War.

THE CASUALTY LIST.

THE following names of medical officers appear among the casualties announced since our last issue :—

Killed.

Captain H. H. Proudfoot, R.A.M.C., attached to the Royal Field Artillery, was educated at Edinburgh University, where he qualified in 1911. After holding appointments at the Edinburgh Royal Infirmary and at the Monsall Fever Hospital, he became resident medical officer at the Burnley Union Infirmary, which appointment he held when he joined the R.A.M.C. in May, 1915.

Captain D. B. MacLean, R.A.M.C., attached to the East Lancashire Regiment, was a member of the Canadian Army Medical Corps, and received his commission in June, 1915.

Lieutenant M. W. Loy, R.A.M.C., attached to the Cheshire Regiment, was a student at the London Hospital, and qualified in 1894. He held appointments at the London Hospital and at the Whitechapel Infirmary, and joined the R.A.M.C. in February this year.

Captain G. S. Miller, R.A.M.C., was a student at Guy's Hospital, London, and qualified in 1912. He joined the R.A.M.C. early in 1915.

Died.

Captain H. F. G. Noyes, R.A.M.C., was educated at Cambridge and at the London Hospital, and qualified in 1907. At the outbreak of the war he was in practice at Worthing, and subsequently joined the R.A.M.C., and did duty in Egypt and India. He died at Bombay, from paratyphoid fever, early in the present month.

Wounded.

Captain L. Anderson, R.A.M.C., attached to the King's Royal Rifle Corps.
Captain W. K. Fry, R.A.M.C., attached to the Royal Welsh Fusiliers.
Captain B. B. Noble, R.A.M.C., attached to the Suffolk Regiment.
Lieutenant W. S. T. Connell, R.A.M.C., attached to the Royal Sussex Regiment.
Captain F. W. Squair, R.A.M.C., attached to the Royal Field Artillery.
Captain W. E. Wallis, R.A.M.C., attached to the Royal Field Artillery.
Captain J. Gaston, R.A.M.C., attached to the Yorks Light Infantry.
Lieutenant H. Mitchell, R.A.M.C.
Captain A. O. P. Reynolds, R.A.M.C., attached to the South Staffs. Regiment.
Captain G. E. St. C. Stockwell, R.A.M.C.
Lieutenant C. E. Tucker, R.A.M.C.
Lieutenant J. S. Darke, R.A.M.C.
Lieutenant J. B. Dunning, R.A.M.C., attached to the Royal Sussex Regiment.
Captain B. Murphy, R.A.M.C., attached to the Connaught Rangers.

Previously Reported Missing, Now Reported Wounded and Prisoner in German Hands.

Captain V. D. O. Logan, R.A.M.C.

Prisoner in Turkish Hands.

Sub-Assistant Surgeon Ali Barkat, Indian Subordinate Medical Department.

DEATHS AMONG THE SONS OF MEDICAL MEN.

The following sons of medical men must be added to our lists of those who have fallen during the war :—

Second Lieutenant E. M. Mair, Cameron Highlanders, only son of Lieutenant-Colonel E. Mair, late I.M.S.
Major R. Walker, Royal Engineers, second son of Dr. A. D. Walker, of Pembridge-gardens, London.
Captain C. J. Griffin, Royal West Surrey Regiment, second son of Captain T. G. Griffin, R.A.M.C., of Wimbledon, Surrey.
Second Lieutenant H. C. Bernard, Gloucestershire Regiment, attached to the Worcestershire Regiment, eldest son of Dr. C. Bernard, of Fishponds, Bristol.
Lieutenant F. W. H. Renton, Border Regiment, second son of the late Brigade-Surgeon Lieutenant-Colonel D. Renton, 15th Hussars.
Second Lieutenant E. E. Craig, Royal Irish Rifles, fourth son of Dr. J. Craig, of Londonderry.
Private E. Gurdon, Australian Infantry, elder son of Dr. E. Gurdon.
Major N. W. Lawder, Bedfordshire Regiment, only son of Dr. E. J. Lawder, of Wokingham, Berks.
Captain J. E. Bennett, Royal Irish Regiment, third son of the late Lieutenant-Colonel J. Bennett, I.M.S.
Second Lieutenant C. Blake, Bedfordshire Regiment, fourth son of Dr. W. H. Blake, of Harpenden, Herts.
Lieutenant F. T. D. Cade, Hampshire Regiment, only son of Mr. S. Cade, L.R.C.P., &c., of Fareham, Hants.
Captain G. P. Littlewood, Sherwood Foresters, son of Dr. S. Littlewood, of Mansfield, Notts.
Second Lieutenant R. C. K. Mill, Black Watch, eldest son of Dr. A. J. M. K. Mill, of Kirriemuir, Forfarshire.

THE HONOURS LIST.

The following awards, for services in Gallipoli, are announced :—

C.M.G.—Fleet-Surgeon E. J. Finch, R.N.
D.S.O.—Staff-Surgeon A. F. Fleming, R.N.

THE SANITARY CONDITION OF THE ITALIAN ARMY.

From the Italian Headquarters a correspondent writes the reassuring announcement that the sanitary condition of the Army maintains the excellent standard it has never lost since entry into the fighting line. Infective disease has effected no foothold in the Italian regiments, while in those of the enemy it has "come to stay" in various forms. One outstanding phenomenon has been put on record by General Cadorna's medical staff—to wit, the number of the sick is distinctly lower than that of the wounded, therein reversing the usual experience of armies in the field. This fact, as significant as it is rare, the report from headquarters attributes to the "straordinaria efficienza dell' organizzazione profilattica," in which every method known to up-to-date hygiene has been put in practice. Two of Cadorna's regiments having taken an enemy position found it quite a fever preserve, due to the insanitary conditions in which the Austro-German forces, after months of occupation, had abandoned it. Notwithstanding the attacks incessantly renewed of the said forces, the two regiments maintained a steady disinfecting service, supplemented by prophylactic methods in improved water-supply, in ventilation under canvas, and in laundry work, quite in keeping with the most recent hygienic standards. Within a few weeks the disease was not only arrested but stamped out, with a thoroughness which has evoked from his Excellency Signor Orlando, Minister of the Interior, a telegraphic message to Cadorna's headquarters, congratulating the medical staff on its skill and energy and emphasising the obligation under which the civil population of the local commune had been laid by such an impressive object-lesson in sanitary rehabilitation.

The psychoses due to neuro-pathological disturbances continue to draw the attention of the physicians on duty in hospital. Aphasia induced by shock, generally the explosion of a projectile, is still quite a common lesion, particularly among the Sicilian and Neapolitan linesmen, whose emotional susceptibility renders them exceptionally liable to the lesion in question. At Leghorn, for instance, a Southern Italian was admitted to the military hospital for absolute loss of speech caused by the bursting of a shrapnel at his feet. The physician in attendance, before proceeding to hypnotise him, was insistent in his efforts to get the patient to pronounce the word "mamma"—efforts at last rewarded by the almost electric disappearance of the dumbness and the overjoyed linesman's hurried resort to the hospital chapel to recite words of thanksgiving.

IRISH DOCTORS OF MILITARY AGE.

An Irish correspondent writes : "The dispute between the Irish Local Government Board and country guardians concerning the appointment of doctors of military age, to which you referred last week, seems to be unending. At Letterkenny, on Sept. 8th, notwithstanding that the Local Government Board wrote that the objection to the appointment of Dr. McGinley, on the ground that his services as a young man of the medical profession would be useful to the military authorities, would apply to any proposal for his employment either as temporary or permanent medical officer during the continuance of the war, a resolution was carried, requesting the Local Government Board to sanction his temporary appointment at

the rate fixed for the permanent appointment, pending the termination of the war. It was also passed by a majority to instruct Dr. McGinley to take up his duties at once, and directions were given that the keys should be handed over to him. One of the guardians actually remarked, in reference to the chairman who voted for a candidate who was over military age, that he was an old ex-artillery man, and that 'the people should gather stones and throw them at you,' to which the chairman is reported in the public press to have replied, 'It is all they could do, for they are cowards.' On Sept. 9th a letter was read at the meeting of the Omagh board of guardians from the Local Government Board reminding the guardians that any payment made to Dr. D. F. Murnaghan under existing circumstances would be liable to surcharge by the auditor, to whom the matter had been referred. It was decided to let the Local Government Board know that, in the words of a guardian, 'they would transact their own business and would pay the salary. If the Local Government Board attempted to surcharge them, they had the courts of law to decide who was right.' The weak action of the Local Government Board in these cases is exciting great wonder. It is felt that they should either allow the guardians to make whatever appointments they like, or should firmly decide not to sanction their choice. Either course would show some decided action, but, instead, letters continue to be written week after week, a line of policy which makes all the country guardians feel that the Local Government Board is either divided in opinion or is afraid to act."

THE BLINDED IN WAR AT THE VILLA ALDOBRANDINI.

Grandly situated on the Tusculan Hills, within an hour by rail from Rome, and familiar to the English-speaking world through the verse of Frederick Locker and the gay romance of Mortimer Collins, the Aldobrandini Villa is at present the home of Italian officers and linesmen who have had their eyesight impaired or lost in action, whether in the Trentino or the Istrian Triangle. They are under the care of Professor Neuschüler, an Italianised German, of the Roman Ophthalmic Clinique, who, assisted by his wife, the Signora Maria (*née* Buonerba), has earned the gratitude ever due to supreme medical skill reinforced by the *sagacité de cœur*. That gratitude (writes a Rome correspondent) has just found expression on the occasion of the fifteenth anniversary of Professor and Madame Neuschüler's wedding-day, when, to their visible emotion, they received from their patients an illuminated parchment, on which the following inscription from the pen of Signor Leopoldo Micucci had been engrossed :—

Quod vos—quindecim per annos—una amoris et pietatis fide vinctos—frontis oculis pro patria demissis—heu non datum videre—dolentium—cordis et mentis purissimum lumen—gratia ardet perenni.

(To see you, after 15 years of married life cemented by love and connubial loyalty, is, alas! denied to our outer eye, extinguished in our country's cause; but, grieving as we do, our inner eye, with purest light of heart and mind, glows with the gratitude that never fades.)

To this touching "manifesto" are appended the signatures of all the gallant patients now under treatment in Frascati's noblest villa.

THE FREEMASONS' WAR HOSPITAL.

This hospital has been established at 237, Fulham-road, S.W., and contains 60 beds, with operating theatre, X-ray department, and apparatus for radiant-heat treatment. The institution is now complete and ready to receive the wounded. It will be conducted under the control of the War Office and the British Red Cross Society. The Hon. Arthur Stanley, M.P., and Dr. R. Fox-Symons, of the British Red Cross Society, have inspected the premises and expressed high approval of their suitability and of the up-to-date equipment they contain. They were accompanied by Sir Horace Marshall (honorary treasurer to the fund). Mr. C. E. Keyser (chairman of the committee), Mr. G. F. Marshall (chairman of the house committee), and Mr. Percy Still and Mr. C. H. Thorpe (honorary secretaries). The hospital will be occupied almost immediately by wounded soldiers; and it is of interest to note that while it has been established by the generosity of Freemasons, membership of the Masonic body is not a condition of admission. An appeal to Freemasons has met with generous response; but further financial help is needed for the hospital's continued maintenance.

OBITUARY OF THE WAR.

GEORGE STANLEY GRAHAM, M.B., CH.B. LIVERP.,

LIEUTENANT, ROYAL ARMY MEDICAL CORPS.

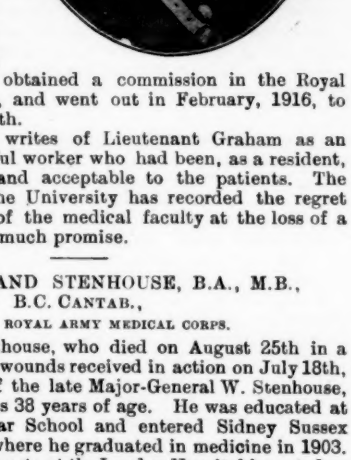
Lieutenant G. S. Graham, who died on June 19th at Amara, Mesopotamia, in his twenty-fourth year, was the only son of Captain R. P. Graham, of Blundellsands, Liverpool. He was educated at Oakes Institute and entered the Medical School of the University of Liverpool with the County and Gee scholarships, gaining also the Lyon Jones scholarship in 1911. He took his degree with first-class honours in 1915, having previously acted as resident officer at the Hospital for Women, the Children's Infirmary, and the Lying-in Hospital. After qualifying he was appointed house surgeon and resident medical officer to the Royal Infirmary, Liverpool. In November, 1915, he obtained a commission in the Royal Army Medical Corps, and went out in February, 1916, to meet an untimely death.

One of his chiefs writes of Lieutenant Graham as an enthusiastic and skilful worker who had been, as a resident, useful to the staff and acceptable to the patients. The Vice-Chancellor of the University has recorded the regret felt by the members of the medical faculty at the loss of a life which showed so much promise.

JOHN MAITLAND STENHOUSE, B.A., M.B., B.C. CANTAB.,

CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain J. M. Stenhouse, who died on August 25th in a hospital in France of wounds received in action on July 18th, was the second son of the late Major-General W. Stenhouse, Indian Army, and was 38 years of age. He was educated at the Bedford Grammar School and entered Sidney Sussex College, Cambridge, where he graduated in medicine in 1903. After filling resident posts at the London Hospital he acted as travelling physician to Prince Leopold of Battenberg, spending two winters with him in Khartoum. In 1906 he joined the staff of the Union Medical College at Peking, and during the outbreak of pneumonic plague in Manchuria five years later he volunteered his services to the Chinese Government and remained at Harbin until the disease had been stamped out. For his services he was decorated with the Order of the Double Dragon. During the recent revolution in China, 1911–12, he accompanied the Army, doing Red Cross work. Being in England on furlough at the outbreak of the present war he immediately obtained a commission in the Royal Army Medical Corps. After some months of work at home he went to France, where he was attached to a general



hospital until November, 1915, when he was transferred to the Royal Field Artillery, and it was while serving with them that he received the spinal wound which proved fatal later.

The colonel of his brigade writes of Captain Stenhouse as a man who tended the wounded under the heaviest shell fire without any thought of his personal safety, and adds that he had been recommended for the D.S.O. Captain Stenhouse leaves a widow and two little boys.

ALEXANDER PETRIE LOW, M.B., C.M. EDIN.,
CAPTAIN, ROYAL ARMY MEDICAL CORPS.

Captain A. P. Low, who was killed in France on July 14th at the age of 41, was a native of Arbroath and was educated at the Academy there. He studied medicine at Edinburgh University and was medallist in physiology, practical anatomy, and practical pathology. After a short experience as assistant in a mining practice in the North of England, he started in general practice in Dundee. Later he was appointed assistant surgeon and again surgeon to Dundee Royal Infirmary, and when the First Scottish General Hospital (T.) was organised he was a member of its staff, and as such was mobilised on the outbreak of war. After a year he applied for transfer to France, and had nearly completed a year of service in various capacities. As medical officer with the Seaforth Highlanders he was following the attack, dressing his men under fire, when he was killed.

Many of Captain Low's comrades, both officers and men, have written expressing their appreciation of his courage and conscientiousness. Among his colleagues in civil life he took a full share of coöperative work as secretary and representative in the British Medical Association. He is survived by a widow and two young sons.

SOLDIERS' AND SAILORS' DENTAL AID FUND.—This fund was started in November, 1914, and had for its object the giving of dental aid to sailors and soldiers to fit them for active service. It was closed in May, 1916, the War Office having intimated that the men of the home army need not have artificial teeth. From the statement of accounts which has just been issued it is shown that £6,815 were collected, and that after payment of expenses there was a cash balance of £140, which has been divided between the Royal and National Dental Hospitals. Application for help was received from 13,787 sailors and soldiers, including recruits. Surgical treatment was given in 11,455 cases, double dentures were provided in 1568 cases, and single dentures in 463 cases. The committee calls attention to the fact that less than 4½ per cent. of the subscribed fund has been spent in office expenses.

PROVISION FOR THE SICK AND WOUNDED IN RUMANIA.—Queen Marie of Rumania has taken the initiative in transforming the Royal Palace at Bucharest into a hospital for sick and wounded. Her Majesty has sent a telegram to Mr. Alfred Hurst, of Edinburgh, chairman of the National Rumanian Relief Fund, expressing appreciation of the work of the Edinburgh Committee formed for the purpose of presenting to Rumania motor ambulances and hospital equipment. Lord Rosebery, the President of the Fund, has given 100 guineas.

SILVER BADGE FOR WAR SERVICE.—The King has approved the issue of a silver war badge to officers and men of the British, Indian, and Overseas Forces who have served at home or abroad since August 4th, 1914, and who on account of age or physical infirmity arising from wounds or sickness caused by military service have, in the case of officers, retired or relinquished their commissions, or, in the case of men, been discharged from the Army.

THE GAZETTE OF THE 3RD LONDON GENERAL HOSPITAL.—The September issue of this Gazette maintains its reputation both in regard to literary matter and illustrations. It contains reproductions of portraits of Captain Sir J. F. H. Broadbent, Captain F. J. Wethered, Captain A. E. Dodson, and Captain L. A. Celestin. The matron recalls the fact that the hospital started with 520 beds, while now the majority of 1637 beds are occupied, and an extension up to 1800 beds is contemplated.

MALINGERING AND SELF-MUTILATION.—We publish elsewhere the new regulations under the Defence of the Realm Act making it penal to attempt escape from military service by feigning disease, or by producing disease by self-mutilation or self-drugging. It is an offence also against these regulations to assist any would-be malingerer in such schemes.

THE FIRST WAR CHARITY TO BE REGISTERED.—The Joint War Committee of the British Red Cross Society and the Order of St. John is first on the new register under the War Charities Act. No one will challenge its right to this place.

THE sum of £1000 has been collected through Mr. T. R. St. Johnston, the District Commissioner of the Lau Islands, for the purchase of a pair of the latest type of Red Cross motor ambulances for the front. The Lau Islands are a group lying about 200 miles to the east of Fiji; and the natives, an intellectual type of the Polynesian race, are intensely loyal, and have previously subscribed largely to various patriotic funds. The islands produce about £100,000 worth of the all-important copra per annum.

THE Secretary of the War Office announces that all applications for permits to visit wounded or sick officers of the Territorial Force in France should be made at the Territorial Force Officers' Casualty Department, York House, Kingsway, W.C., and not at the War Office.

Correspondence.

"Audi alteram partem."

TREATMENT OF VENEREAL DISEASES AT GENERAL HOSPITALS.

To the Editor of THE LANCET.

SIR,—As surgeon to a provincial general hospital, I suggest it would be a good plan to follow up your excellent leading article of August 12th with another dealing with some of the difficulties in the way of working the plan of the Local Government Board. I am presuming that all are agreed that we should help to combat this admitted evil, and a free and full discussion in your columns would, no doubt, be very advantageous in suggestions for the best method of helping the scheme and possibly diminishing the difficulties. When my colleagues and myself met to consider the question it was thought it would not be easy, with the staff reduced to half just now, to start evening clinics, especially considering that books and forms would have to be kept, and so far there is no indication that simplicity in these respects would be attended to. Then, again, how can the secrecy so much insisted on be maintained either at the clinic or in the hospital wards, when we are told no distinction whatever must be made between the venereal and other patients? May not trouble arise with the other patients and nurses unless special wards and attendants are provided? As cases would come not only from the town but also from the surrounding districts, who would have to be paid for, that increases the number of officials who would claim the right of visit and inspection, and add to the calls on the time and patience of the medical officer of the clinic.

An opinion as to the rates of pay would be useful. Should the scheme be adopted, as in all probability it will be, the voluntary basis of hospitals is seriously encroached on, and sooner or later will, I think, disappear altogether, and *all* hospitals will be maintained and governed by the State. Opinion may vary as to the desirability of this, but that it is coming is, in my opinion, inevitable. Is the alternative preferable, that the treatment should be given at the special State institutions and by special State officials? It would probably be equally efficient, and would leave the hospitals to continue in their present method of government. These are some of the points that occur to me, and some discussion on them and many others I have not noticed would be a great help to hospitals and the profession generally.

I am, Sir, yours faithfully,

RAYMOND SHAW, M.S., M.B. Durh.,
Sept. 8th, 1916. Surgeon to the Great Yarmouth Hospital.

THE CHOICE OF ANÆSTHETIC FOR A MILITARY HOSPITAL.

To the Editor of THE LANCET.

SIR,—Captain A. G. Wilkins is to be congratulated on the great variety of methods he appears to have tried, as well as the quantity of expensive apparatus with which he has been supplied. At my hospital we obtained from the War Office the following—viz.: Two Hewitt's wide-bore gas and ether apparatus, but without any N_2O, of which we have never been able to get more than enough for the dentist's use, and that through some other channel; two Ormsby's inhalers; two Carter Braine's Junker apparatus; two Rendell's masks and one or two Schimmelbusch masks; some small 1½ oz. stoppered glass drop-bottles. Anything else we wanted we have been obliged to provide ourselves.

After an experience of over 1500 cases among soldiers here I have arrived at the conclusion that the best method of maintaining anæsthesia in nearly all ordinary surgical procedures, and especially in long operations, is to give chloroform by means of a Junker apparatus with a flannel-covered

Modification of Hewitt's Chloroform Mouth-prop and Tube.

face-piece. I have employed this method in over 300 cases and have obtained far better results with it than I formerly had with ether or C.E mixture. Some of my cases have been very long ones. My surgeons have been quite satisfied with the anæsthesia thus obtained. It would be interesting to know the opinions of Captain Wilkins's surgeons on his results.

May I call attention to a modification of Hewitt's chloroform mouth-prop and tube which the Holborn Surgical Instrument Company have made for me, in which rubber pads are substituted for the usual lead facing? I enclose an illustration.—I am, Sir, yours faithfully,

A. DE WINTER BAKER,
Senior Resident Anæsthetist, County of London War Hospital.
Epsom, Sept. 8th, 1916.

TRENCH WARFARE AND RENAL FUNCTION.

To the Editor of THE LANCET.

SIR,—Captain J. W. McLeod and Major Ameuille in this week's LANCET suggest that trench nephritis may have a scorbutic origin, being due partly to lack of fresh vegetable food and excess of protein. In May, 1915, the men in my battalion and those in the adjacent trenches were getting considerable quantities of vegetables, especially potatoes, leeks, and carrots. There were large heaps of covered potatoes near the ruined farms which were incorporated in the trench system. There were fields and gardens full of leeks, and every village garden had a stock of carrots. Later on there were red currants in great quantities. The diet, therefore, was not scorbutic in the least, and yet just at this period albuminuria and nephritis were very common. That the men ate far too much I quite agree, but this is common in ordinary life. In a short article to THE LANCET (Feb. 26th, 1916), I suggested that the nephritis might be infective. It is not rare to get a mild nephritis in many febrile diseases, as in tonsillitis, influenza, and empyema, &c. I often wonder if there is not too great a tendency to ascribe inflammation of the kidneys to toxins rather than to infective organisms. I would not dogmatise, for a moment, on the subject, and I am aware that in certain parts of the line there was a lack of vegetable food. In our part, however, there was no lack, yet there was a good deal of nephritis.

I am, Sir, yours faithfully,

London Hospital, E., Sept. 11th, 1916. F. G. CHANDLER.

THE PRICE OF GAS.

To the Editor of THE LANCET.

SIR,—In your issue of Sept. 2nd, in the course of an interesting and sound article on "Economy and Public Health," you remark: "The gas companies are charging the public more for gas. Why gas should be dearer when gas residuals are in enormously increased demand ..... passes the common understanding."

May I point out that the price of gas is never raised except under the greatest stress of circumstances, not only because gas managers are keenly alive to the commercial advantage of a low price, but because, under the terms of the exceedingly wise bargain made between Parliament and the gas industry (alike for the protection of the public and for the encouragement and reward of prudent enterprise and sound management) a rise in the price of gas must in the case of the great majority of undertakings be attended by a fall in the rate of dividend payable; and, conversely, a condition precedent to an increased dividend is a reduced price to the consumer.

It is true that residuals are producing an increased revenue for gas undertakings at present, but this is far more than counterbalanced by the high cost of the principal raw material (coal) and of its carriage, by the increased cost of every other material used on a gas works, and by the substantially higher wages bill.

The following figures from the accounts for the past half year of the Gas Light and Coke Company clearly illustrate these facts:—

Expenditure: June half-year, 1915		£1,896,231
" " 1916		2,431,626
Increased expenditure		535,395
Revenue from residuals:		
June half-year, 1915	£439,449	
" " 1916	758,207	
Increased revenue		318,758
Excess of increased working expenses over increased revenue from residuals		£216,637

Such figures, which are characteristic of many others, fully justify the comparatively small percentages of increase which gas undertakings have been obliged to make in the prices charged to the public—increases accompanied, as I have pointed out, by decreases in dividends distributed.

If all industries could have been controlled by such an equitable "sliding scale" arrangement there would be no agitation against profiteers to-day.

I am, Sir, yours faithfully,

W. M. MASON,
Secretary, the British Commercial Gas Association.
Victoria street, Westminster, Sept. 12th, 1916.

IMMOBILITY AFTER JOINT INJURY.

To the Editor of THE LANCET.

SIR,—I have read the letter of Sir John Collie in THE LANCET of Sept. 2nd, p. 447, upon the above subject with much pleasure, feeling sure that he is reasoning in the right direction. This method I have been advocating during my professional life, and have been carrying it out with decided benefit to patients and pecuniary advantage to employers. There is no doubt that in injuries in connexion with joints, as well as injuries occurring in other parts of limbs, traumatic myositis, neuritis, fibrositis, periostitis, and synovitis take place, hence adhesions are formed, and these should be broken down so soon as the acute inflammation has ceased. I see cases almost daily where slight injuries in the vicinity of joints compel a patient to perhaps lie up, or necessitate his absence from duty, his time being wasted, and in industrial cases his employer is out of pocket; if massage had been used all this should have been obviated to a certain, in some cases, a considerable extent. It is known to many how much more quickly fractures unite and how deformities are avoided when the seat of the mischief is uncovered and massaged occasionally instead of the limb being immobilised, as in plaster, and not being seen until union, perhaps faulty union, has taken place. The course which I pursue in connexion with appropriate cases is to commence massage and passive motion as soon as the acute traumatic inflammation has subsided, working gently at first and more forcibly as time goes on and the patient can tolerate more.—I am, Sir, yours faithfully,

Cleveland-terrace, W., Sept. 6th, 1916. D. GAULT.

"QUININE PARADES."

To the Editor of THE LANCET.

SIR,—Surely Mr. Halford Ross has exhibited some mental confusion in his letter, under this heading, wherein he jeers at the idea of lowering or abolishing the incidence of venereal diseases by curing the infected individuals. These diseases are not, as far as is at present known, at all comparable with malaria, tuberculosis, or diphtheria. Malaria is carried in a second host, tuberculosis by contaminated dust and possibly by milk, and diphtheria may certainly be borne by milk as well as by contact. The cure of individual cases of these diseases is therefore likely to do little good in the case of the first and some good in the case of the two others. In syphilis, as far as we at present know, personal contact or contact with very recently infected materials is a necessity for the production of the disease. The reason for the extensive spread is largely the prolonged infectivity of the patient. The rapid cure or the abolition of this infectivity would, therefore, appear to be a most important factor in reducing the incidence of the disease, and although a higher morality is to be strenuously sought for, it is not the only method of combating the spread of syphilis. The four diseases named by Mr. Ross all show great differences in the manner of their spreading, and to confuse syphilis with malaria in this manner would be likely to cause disastrous results.

I am, Sir, yours faithfully,

Harley-street, W., Sept. 11th, 1916. ARTHUR WHITFIELD

To the Editor of THE LANCET.

SIR,—Allow me to endorse every word of Mr. H. Ross's letter in THE LANCET of Sept. 9th, against the prophylactic treatment of our troops in the Mediterranean with quinine against malaria. It is an easy-going Indian official view—no other country relies on it—and saves the trouble and expense of mosquito-curtains, wire-netted hospitals, huts, and houses plus an anti-mosquito campaign, which are the only real safeguards. So long ago as 1890 I reported in Burma the failure of the drug in this respect both in the *Indian Medical Gazette* and to the late Lord Roberts.

A few months ago Captain H. Stott, I.M.S., of Madras, after classical experiments with alternate companies of his regiment in Burma remarks: "The results are directly opposed to preconceived ideas on the subject," and he asks for an inquiry as "an urgent necessity" on the subject.

If facts and figures ever prove anything, the last annual report (1913) published of the Sanitary Commissioner with the Government of India settles the question for ever. *Vide* pp. 12, 13, 32, 33, 62, &c.—e.g., at Baroda the admissions for malaria (native troops) reached 634 per mille, though "quinine was given throughout the year." At Peshawur (British troops) to 351 per mille, and the medical officer notes that "the parasites resisted the effects of cinchonisation." At Rawal Pindi to 564 per mille, and the medical officer notes that "quinine was given twice weekly on consecutive days, and for four months after discharge, all blood being examined." At Lahore the figures rise to 785 per mille. I am, Sir, yours faithfully,

G. C. HALL,
Barnes, S.W., Sept. 12th, 1916. Captain, I.M.S. (retired).

TEPID BATHS IN THE TREATMENT OF MALARIA.

To the Editor of THE LANCET.

SIR,—In July and August I practise at an Alpine health resort, the Somvix valley in the canton of Grisons, situated 1300 metres above sea-level. This year I was in charge of 83 interned German invalided soldiers, who spent the summer at our smaller hotel. About 22 had suffered from malaria and 15 had still acute and severe attacks of malaria every three to eight days. I ordered tepid half-baths to be given to all these cases three times a week, such as have given me excellent results in the treatment of infantile catarrhal pneumonia.[1]

The bath tub is only filled about one-third with water of 23° C. Legs, arms, back, and chest are alternately rubbed vigorously for five minutes. The results were very satisfactory, as will be seen from the following statistics referring to 15 soldiers:—

	No. of severe attacks per month.
1. During captivity in Algiers, Corsica, and French hospitals, under continual quinine treatment ...	107
2. During the stay in the Somvix valley under intermediate quinine treatment	65
3. During the stay in the Somvix valley under bath treatment	5

Very severe attacks did not occur any more, five were fairly severe, eight abortive, with slight fever of short duration. Convalescents made rapid progress, the anæmia decreased, and the action of the heart improved. In five cases of recurrence the baths are now given five to six times a week. I am, Sir, yours faithfully,

THEODORE ZANGGER, M.D.
Somvix Valley, August 19th, 1916.

[1] THE LANCET, vol. i., 1902, p. 1826.

ABDOMINAL PREGNANCY, PROBABLY PRIMARY.

To the Editor of THE LANCET.

SIR,—Your invaluable periodical has reached the undersigned without interruption (in spite of submarines, &c.) throughout the European War, as it had been doing previously for a quarter of a century. It must be difficult for you to appreciate the satisfaction experienced by one in such an *Ultima Thule* as this, to feast on the banquets provided for his repast by the contributors who collaborate in the weekly production of THE LANCET; but none the less there are occasions when one is tempted to criticise.

Such seems to be the case in an article which appears, under the title of this note, in the issue, July 15th, 1916, by Dr. F. J. McCann. One of the reasons given for not making a diagnosis until too late, or what is the same thing, until the toxæmia had progressed beyond the reach of cure, was the extreme abdominal tenderness, which made the patient resent any attempted pressure. Is it permitted to ask: Why an anæsthetic was not used in such a case, to facilitate manipulations?

There is no comment intended on a valuable scientific contribution, only the question is asked: Has the war exhausted Duncan and Flockhart's supply, or that of Adrienne (Merck's being non-gettable)? Or was there some contra-indication, not discernible by the reader, to the use of an agent which in even much less skilled hands than those of the "surgeon to the Samaritan Free Hospital for Women" would have almost surely rendered possible an earlier diagnosis, and thereby saved the life of a comparatively young mother of three children.

Enclosing my card, I am, Sir, yours faithfully,

Guatemala City, Central America, August 15th, 1916. W.

Medical News.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL (UNIVERSITY OF LONDON).—A Burney Yeo scholarship for 1916 has been awarded to E. A. Woods, B.A., New College, Oxford.

PRESENTATION TO DR. R. ARMSTRONG-JONES.—On Sept. 7th, Dr. Robert Armstrong-Jones was presented by the staff, medical and lay, of Claybury County Asylum with a silver tea and coffee service on the occasion of his retiring from the post of resident physician and superintendent after 24 years' service. The enthusiasm of the proceedings, at which most of the staff were present, bore testimony to the esteem in which Dr. Armstrong-Jones was held. The chair was occupied by Mr. Chapman, chairman of the London County Council Asylums Committee, who bestowed great praise on Dr. Armstrong-Jones for his work, viewed from the standpoint of the County Council, and said that there was little doubt that the country would still receive the benefit of his great knowledge and experience. Dr. C. T. Ewart said that Claybury took a foremost place among the asylums of the world, and the loss of their excellent superintendent must determine them to strive that this should continue to be the case. Dr. Armstrong-Jones will continue his lectures on mental diseases at St. Bartholomew's Hospital and his work as a consultant in mental cases to the military forces in London.

Appointments.

Successful applicants for vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

ADAMS, ALFRED, M.A., M.B., B.Ch. Oxon., L.R.C.P. Lond., M.R.C.S., has been appointed temporarily Medical Officer for the Looe District by the Liskeard (Cornwall) Board of Guardians.

BARNES, FRANK, M.B., M.S. Lond., F.R.C.S. Eng., Honorary Surgeon to the General Hospital, Birmingham.

BROWNE, W. M., L.R.C.P. & S. Edin., L.F.P.S. Glasg., Certifying Surgeon under the Factory and Workshop Acts for the Uffculme District of the county of Devon.

CARLYLE, P. M., M.B., C.M. Edin., Certifying Surgeon under the Factory and Workshop Acts for H.M. Factory at Gretna, in the counties of Cumberland and Dumfries.

DEVLIN, J. F. P., Certifying Surgeon under the Factory and Workshop Acts for the Gortin District of the county of Tyrone.

DYBALL, BRENNAN, M.B., B.S. Lond., F.R.C.S. Eng., L.R.C.P. Lond., Honorary Surgeon to the Royal Devon and Exeter Hospital.

Dr. OSMOND, Public Vaccinator for Hayle, by the Redruth (Cornwall) Board of Guardians.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

When the application of a Belgian medical man would be considered the advertisers are requested to communicate with the Editor.

BIRMINGHAM, CITY FEVER HOSPITAL, Little Bromwich.—Resident Female Medical Officer. Salary £250 per annum, with board.

BIRMINGHAM GENERAL DISPENSARY.—Resident Medical Officer, unmarried. Salary £250 per annum, with apartments, &c.

BIRMINGHAM AND MIDLAND EYE HOSPITAL, Church-street.—Resident Surgical Officer. Salary £300 per annum, with residence, &c.

BOLTON INFIRMARY AND DISPENSARY.—Female Second House Surgeon. Salary £200 per annum, with board, &c.

BRIGHTON COUNTY BOROUGH ASYLUM, Haywards Heath.—Locum Tenens Assistant Resident Medical Officer for four or five weeks. Salary £6 6*s.* per week, &c.

BRISTOL ROYAL INFIRMARY.—House Physician. Salary at rate of £120 per annum, with board, &c.

CARDIFF, KING EDWARD VII.'s HOSPITAL.—House Surgeon for six months. Salary at rate of £140 per annum, with board, &c.

DERBY, DERBYSHIRE ROYAL INFIRMARY.—Two Females as House Physicians, Anæsthetists, and Casualty Officers. Salary £150 per annum, with board, &c.

DUDLEY, GUEST HOSPITAL.—Assistant House Surgeon. Salary £120 per annum, with board, &c.

DUNDEE, KING'S CROSS (FEVER) HOSPITAL.—Resident. Salary £150 per annum, with board, &c

EVELINA HOSPITAL FOR CHILDREN, Southwark, London, S.E.—House Physician. Salary at rate of £160 per annum, with board, &c. Also Clinical Assistants in Out-patient Departments.

GREAT YARMOUTH HOSPITAL.—House Surgeon, unmarried. Salary £200 per annum, with board, &c.

GUILDFORD, ROYAL SURREY COUNTY HOSPITAL.—House Surgeon.

HARROGATE INFIRMARY.—House Surgeon.

HUDDERSFIELD ROYAL INFIRMARY.—Two Assistant House Surgeons. Salary per annum—qualified £100, unqualified £80, with board, &c.

LEEDS PUBLIC DISPENSARY.—Female Resident Medical Officer. Salary £200 per annum, with board, &c.

MINISTRY OF MUNITIONS.—Female Medical Officer for Factory in Western Midlands. Salary £400 per annum.

PLAISTOW FEVER HOSPITAL, E.—Female Second Assistant Medical Officer. Salary at rate of £150 per annum, with board, &c.

ROYAL LONDON OPHTHALMIC HOSPITAL, City-road, E.C.—Third House Surgeon. Salary at rate of £50 per annum, with board, &c.

SALFORD ROYAL HOSPITAL.—House Surgeon. Salary at rate of £200 per annum, with board, &c. And Junior House Surgeon. Salary at rate of £150 per annum, with board, &c.

SHEFFIELD CITY HOSPITALS (INFECTIOUS DISEASES).—Assistant Medical Officer. Salary £225 per annum, with board, &c.

SHEFFIELD, ROYAL INFIRMARY.—Two House Surgeons. Salary £100 per annum, with board, &c.

SHEFFIELD UNIVERSITY.—Demonstrator in Pathology and Bacteriology. Salary at rate of £300 per annum.

SUNDERLAND ROYAL INFIRMARY, CHILDREN'S HOSPITAL.—Resident Medical Officer for six months. Salary £150 per annum, with board, &c.

WEST BROMWICH AND DISTRICT HOSPITAL.—Assistant House Surgeon. Salary £120 per annum, with board, &c.

WEST HAM HOSPITAL, Stratford.—Resident House Surgeon. Salary £150 per annum, with board, &c.

WEST HAM UNION INFIRMARY, Whipps Cross-road, Leytonstone, N.E.—Resident Assistant Medical Officer. Salary £300 per annum, &c.

THE Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies for Certifying Surgeons under the Factory and Workshop Acts at Godalming, Surrey; and at Sidmouth, Devon.

Births, Marriages, and Deaths.

BIRTHS.

FORBES.—On Sept. 8th, at Elgin Mansions, Elgin-avenue, W., to Captain W. S. Forbes, R.A.M.C. (T.), and Mrs. Forbes—a daughter.

ROSS.—On Sept. 8th, at Chapel-street, Leigh, Lancashire, the wife of A. T. Ross, M.D., F.R.C.S.E., late Lieutenant, R.A.M.C., of a son.

SIMPSON.—On Sept. 11th, at Radcliffe, Murrayfield, Edinburgh, the wife of Surgeon A. Simpson, R.N.—a son.

MARRIAGES.

CAMPBELL—PALMER.—On Sept. 12th, at St. Marylebone Church, by the Very Rev. the Dean of Lincoln (cousin of the bride), Fleet-Surgeon John A. Campbell, M.D., R.N., to Constance Mary, only daughter of Frederick S. Palmer, M.D., F.R.C.P., and Mrs. Palmer, of Wimpole-street and Clarence Gate-gardens.

PHILLIPS—TRIMBLE.—On Sept. 6th, at All Saints' Church, South Merstham, Montagu Phillips, M.A., M.D. Cantab., to Margaret Edith (Greta), youngest daughter of the late James Trimble, Deputy Inspector, R.N., and Mrs. Trimble, Battle Bridge House, Merstham, Surrey.

STOPFORD—ALLAN.—At St. George's Church, Blackburn, on Thursday, Sept. 7th, by the Rev. J. H. C. Macauley, Skelmorlie Church, Weymss Bay, John S. B. Stopford, M.D., elder son of Mr. and Mrs. Stopford, Woodbank, Macclesfield, to Lily Allan, M.B., younger daughter of Mr. and Mrs. Allan, Kersal, Blackburn.

DEATHS.

KEATES.—On Sept. 9th, suddenly, William Cooper Keates, M.R.C.S., L.R.C.P., of East Dulwich-road, S.E., aged 65 years.

MILLER.—Killed in action, on Sept. 8th, Captain George Sefton Miller, R.A.M.C., F.R.C.S., aged 25 years.

NOYES.—On Sept. 5th., in Bombay, of paratyphoid, Captain H. F. G. Noyes, R.A.M.C., aged 36 years.

SELBY.—On Sept. 8th, at Lucknow, India, William Selby, D.S.O., Lieutenant-Colonel, I.M.S., F.R.C.S., Principal, King George's Medical College, Lucknow, honorary surgeon to the Viceroy of India, aged 47 years.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

BOOKS, ETC., RECEIVED.

ADLARD AND SON, London.
Traumatic Pneumonia and Traumatic Tuberculosis. By F. Parkes Weber, M.A., M.D., F.R.C.P. Lond. Reprinted from *Clinical Journal*, July, 1916. Price 6*d.*

AMERICAN LARYNGOLOGICAL ASSOCIATION, New York.
Transactions of the Thirty-seventh Annual Meeting at Niagara Falls, Canada, June, 1915

ARNOLD, EDWARD, London.
Food and the Principles of Dietetics. By Robert Hutchison, M.D Edin., F.R.C.P. Fourth edition. Price 16*s.* net.

CAMBRIDGE UNIVERSITY PRESS, Cambridge and London.
Growth in Length: Embryological Essays. By Richard Assheton, M.A., Sc.D., F.R.S. Price 2*s.* 6*d.* net.

CHURCHILL, J. AND A., London.
Gynæcology for Students and Practitioners. By Thomas Watts Eden, M.D., F.R.C.S., F.R.C.P. (Temporary Major, R.A.M.C.), and Cuthbert Lockyer, M.D., B.S., F.R.C.S., F.R.C.P.

GREEN, W., AND SONS, London and Edinburgh.
An Introduction to Dermatology. By Norman Walker, M.D., F.R.C.P., with the assistance of R. Cranston Low, M.B., F.R.C.P. Sixth edition. Price 15*s.* net.

HEINEMANN, WILLIAM, London.
Lateral Curvature of the Spine and Round Shoulders. By Robert W. Lovett, M.D. Boston. Third edition. Price 3*s.* 6*d.* net.
Refraction of the Human Eye and Methods of Estimating the Refraction (including a Section on the Fitting of Spectacles and Eye Glasses, &c.). By James Thorington, A.M., M.D. Price 10*s.* 6*d.* net.

HOEBER, PAUL, New York.
Roentgenographic Diagnosis of Dental Infection in Systemic Diseases. By Sinclair Tousey, M.D. Price $1.50

KEGAN PAUL, TRENCH, TRÜBNER AND CO., London.
Natural Painless Childbirth and the Determination of Sex. By Filip Sylvan, M.D. Price 1*s.* 6*d.* net.

LAURIE, T. WERNER, London.
The Perils of Peace. By Cecil Chesterton. With an Introduction by Hilaire Belloc. Price 2*s.* net.

LIPPINCOTT, J. B., COMPANY, London and Philadelphia.
The Basis of Symptoms: the Principles of Clinical Pathology. By Dr. Ludolph Krehl. Translated from seventh German edition by A. F. Belfeld, Ph.B., M.D.; with Introduction by A. W. Hewlett, M.D. Third American edition. Price 21*s.* net.
International Clinics. Edited by H. R. M. Landis, M.D., and others. Vol. II. Price 35*s.* net of four vols.
A Glossary of Botanic Terms, with their Derivation and Accent. By Benjamin Daydon Jackson. Third edition. Price 7*s.* 6*d.* net.

LONGMANS, GREEN, AND CO., London.
Annual Charities Register and Digest, 1916. Edited by C. S. Loch. Price 5*s.* net.

MEDICAL SOCIETY OF LONDON.
Transactions: Session October, 1915–May, 1916. Vol. XXXIX.

METHUEN AND CO., London.
A Farmer in Serbia. By Ellen Chivers Davies. Price 6*s.* net.

Notes, Short Comments, and Answers to Correspondents.

MEDICAL FEES IN MANCHESTER.

ACCORDING to a communication to a Manchester paper the doctors have decided to increase their fees for consultations at the surgery and visits at patients' houses. The writer, who appears to be well informed, states that much of the doctor's time is wasted in unnecessary calls and that unless some check is put on these, life will no longer be worth living for the medical man in Manchester. On inquiry we are officially informed that there has been no general increase of fees such as is stated. We understand, however, that the medical profession in Manchester is, in point of fact, terribly overworked, and that it is no unusual thing for a practitioner to begin his round at 8.30 A.M. and finish at 10 P.M. Our correspondent tells us that there are not enough men to do the work of both hospital and private practice, and that the work of both is suffering. If this is so in September, which is ordinarily the slackest time of year for medical practice, he queries what the conditions will be like in the coming winter.

A PNEUMATIC CRUTCH-TOP.

To the Editor of THE LANCET.

SIR,—In THE LANCET of Sept. 9th, p. 480, you illustrate and describe Mr. R. C. Pierce's "Pneumatic Crutch-top." I have had experience of the value of a similar crutch-top. Eighteen years ago I had such a one made for a young girl who came under my care for paralysis of her left arm. She was suffering from a shortening of her left leg which necessitated the use of a crutch, which had caused the paralysis. The pneumatic-topped crutch met all the requirements of her case and has enabled her to carry out her duties without inconvenience. I am, Sir, yours faithfully,

Dublin, Sept. 9th, 1916. GEORGE FOY.

MEDICAL INSTITUTIONS IN FIJI: REPORT FOR 1915.

IN a report on the affairs of Fiji for the year 1915 Mr. R. S. D. Rankin, Acting Colonial Secretary, states that the principal medical institution, the Colonial Hospital, Suva, is under the supervision of the chief medical officer, with a resident medical officer in charge, who is assisted by a junior. The number of patients treated in the hospital during the year was 1512, of whom 216 were Europeans. At the branch hospital at Levuka, which is under the charge of the district medical officer, assisted by a European and a native nurse, there were 808 admissions, including 16 Europeans. There are 11 provincial hospitals for the treatment of native Fijians; these are supervised by Government medical officers, and the total number of admissions was 4349. To the lunatic asylum at Suva there were during the year 29 admissions and 14 discharges, 45 patients remaining in the asylum on Dec. 31st, 1915. On the same date there were 249 inmates of the leper asylum on the island of Makogai, which is under the care of a medical superintendent, who is assisted by a European medical officer, with five European and three Fijian nursing sisters. The estimated total population of the colony is now 159,321, there having been an increase of 19,780 since the Census of 1911. The total rainfall recorded at Suva in 1915 was 99·572 inches, as compared with 140·247 in 1914 and 122·539 in 1913. The mean shade temperatures at Suva for the year were 71·8° minimum and 82·3° maximum.

A HOSPITAL SHIP FOR THE SULU ARCHIPELAGO.

FOR more than 200 years efforts have been made, principally through the use of military force, to bring the Moros and near-related tribes who inhabit the Sulu Archipelago under the influence of civilisation. Spain was unable to accomplish this, and similar efforts made by the United States have not met with much greater success. The Sulu Archipelago, composing the southern group of the Philippines, comprises a large number of small islands. These are inhabited by about 200,000 persons of the Mohammedan faith who lead a nomadic or semi-nomadic life. The Moros since their entry into history have been a people apart. They were the famous Malay pirates that terrorised the Malay seas and devastated the Philippine Islands to the north. The Moro is a man of good physique, quick mind, and of active habits, but he has been so alienated from the rest of the world that the benefits of civilisation have never reached him. Preliminary investigation shows that the medical needs of the people are great. They suffer from malnutrition and from diseases fostered by filth and negligence. The common diseases are skin diseases in their worst forms, malaria, hookworm disease, dysentery, and some of the other preventable infections. The establishment of dispensaries at different places in the Sulu Archipelago similar to those in the more northern islands is not practical because they would only reach a very small fraction of the inhabitants, who are scattered over a large number of small islands. The Rockefeller Foundation proposes to meet the situation by providing a hospital ship to go from island to island meeting the people at established points, bringing medical relief to the afflicted, training midwives, giving general instruction to the people, and guiding and stimulating them to self-help. The International Health Board has entered into an arrangement with the Philippine Government to equip and maintain the ship for five years.

RELICS.

To the Editor of THE LANCET.

SIR,—The busy quest for relics at Cuffley, where the Zeppelin, like Lucifer, dropped

> "..... headlong flaming from th' ethereal sky
> With hideous ruin and combustion,"

has revived in me a desire for information regarding a memento in my own possession. I hasten to add that I have none of the missing parts of the defunct air-ship.

I have a tiny book along the back of which runs the legend, "Relic of the Royal George." Its title-page declares it to be "A Narrative of the Loss of H.M.S. *Royal George*, of 108 Guns, Sunk at Spithead, August 29th, 1782, with a Concise Account of Colonel Pasley's Operations on the Wreck in 1839 and 1840," and it was printed at Portsmouth in the latter of these years. Its covers are of polished wood, and upon each is punched an oval stamp bearing the names "E. & E. Emanuel, Portsmouth." Containing four coloured full-page cuts (one a portrait of Rear-Admiral Richard Kempenfelt) and 80 pages of clear letter-press, the book is a creditable turn-out of the old hand printing-press at the dawn of the Victorian era.

Can any reader of THE LANCET tell me whether the names stamped into the wood are a testification that the covers have indeed been fashioned out of a reclaimed chunk of the old battleship, which had lain at the bottom of the sea for 57 years? I am, Sir, yours faithfully,

Sept. 11th, 1916. W. R.

TYPHUS AT THE PORT OF NEW YORK.

IN his annual report (Albany: J. B. Lyon Co. 1916), as health officer of the Port of New York, Dr. J. J. O'Connell, who died in office on Jan. 1st, gives an interesting account of the measures adopted in respect of typhus and their success. A circular letter was addressed on April 12th, 1915, to the steamship companies whose vessels carry passengers from the Near East, asking them to deal before embarkation with all persons from provinces in which typhus fever is epidemic, submitting them to an anti-parasitic bath with special treatment of the hair with oleum anisi or similar remedy, their clothes and effects to fumigation, and their quarters on board vessel to careful cleaning after disembarkation. A week later an instruction was issued to fumigate with 5 per cent. SO_2 all steerage compartments and hospitals of vessels from ports east of the Adriatic. Towards the end of the year it was noticed that sanitary conditions in the steerage of vessels from Greece were much improved, and the number of pediculosis cases found in the quarantine examination greatly reduced. Only two typhus ships entered the port during the year, both in May, each with one case only. Among 380 contacts no single secondary case occurred.

J. M.—There are no quite generally accepted rules of professional procedure in regard to attendance on a brother practitioner; the question cannot be answered precisely. Most medical men make an abatement, and nearly all remit the fees to those with whom they have been in personal relations, though this is obviously a matter that may want arrangement. If the medical adviser to whom our correspondent alludes thought that the compensation paid by the company for the accident would certainly cover the amount of the account he rendered he would rightly consider that the patient would not have to pay the fees for attendance out of his own pocket.

A. F. D.—The dye mentioned should be used with caution, as in certain quantities it has been known to produce vomiting and albuminuria. Its tinctorial power is, however, strong, and probably the infinitesimal quantity used would be harmless. There are many excellent brown colourings, generally known as caramels, whose use is preferable.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

Medical Diary for the ensuing Week.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.

MONDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye. Dr. Simson: Diseases of Women.

TUESDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

WEDNESDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations. Dr. Simson: Diseases of Women.

THURSDAY.—2 P.M., Medical and Surgical Clinics. X Rays. Mr. Gray: Operations. Mr. B. Harman: Diseases of the Eye.

FRIDAY.—10 A.M., Dr. Simson: Gynæcological Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Baldwin: Operations. Dr. Banks Davis: Diseases of the Throat, Nose, and Ear. Dr. Pernet: Diseases of the Skin.

SATURDAY.—10 A.M., Dr. Saunders: Diseases of Children. Dr. Banks Davis: Operations of the Throat, Nose, and Ear. Mr. B. Harman: Eye Operations. 2 P.M., Medical and Surgical Clinics. X Rays. Mr. Pardoe: Operations.

NORTH EAST LONDON POST GRADUATE COLLEGE, Prince of Wales's General Hospital, Tottenham, N.

MONDAY.—Clinics:—10.30 A.M., Surgical Out-patients (Mr. E. Gillespie). 2.30 P.M., Medical Out-patients (Dr. T. R. Whipham): Gynæcological Out-patients (Dr. Banister). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

TUESDAY.—2.30 P.M., Surgical Operations (Mr. Carson). Clinics:—Medical Out patients (Dr. A. G. Auld); Surgical Out-patients (Mr. Howell Evans); Nose, Throat, and Ear Out-patients (Mr. C. H. Hayton). Radiography (Dr. Metcalfe). 3.30 P.M., Medical In-patients (Dr. A. J. Whiting).

WEDNESDAY.—Clinics:—2.30 P.M., Throat Operations (Mr. C. H. Hayton). Children Out patients (Dr. T. R. Whipham); Eye Out-patients (Mr. R. P. Brooks); Skin Out patients (Dr. H. W. Barber). 5.30 P.M., Eye Operations (Mr. R. P. Brooks).

THURSDAY.—2.30 P.M., Gynæcological Operations (Dr. A. E. Giles). Clinics:—Medical Out-patients (Dr. A. J. Whiting); Surgical Out-patients (Mr. Carson); Radiography (Dr. Metcalfe). 3 P.M., Medical In-patients (Dr. R. M. Leslie).

FRIDAY.—2.30 P.M., Surgical Operations (Mr. Howell Evans). Clinics:—Medical Out-patients (Dr. A. G. Auld); Surgical Out-patients (Mr. E. Gillespie); Eye Out-patients (Mr. R. P. Brooks).

THE THROAT HOSPITAL, Golden-square, W.

MONDAY.—5.15 P.M., Special Demonstration of Selected Cases.
THURSDAY.—5.15 P.M., Clinical Lecture.

The following journals, magazines, &c., have been received:—Edinburgh Medical Journal, Journal of the Royal Sanitary Institute, Journal of Anatomy and Physiology, Canadian Medical Journal, Archives of Internal Medicine, Annales de Médecine, Medical Journal of South Africa, Indian Medical Gazette, Journal of the Missouri State Medical Association, Review of Neurology and Psychiatry, Journal of Laryngology, Rhinology and Otology, British Journal of Children's Diseases, Journal of Physiology, American Journal of Roentgenology, Bulletin of the Johns Hopkins Hospital, Revue d'Hygiène, Pediatrics, Dublin Medical Journal, Indian Journal of Medical Research, Journal of Nervous and Mental Disease, Public Health.

EDITORIAL NOTICES.

IT is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITOR," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention should be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, *and when accompanied by blocks it is requested that the name of the author, and if possible of the article, should be written on the blocks to facilitate identification.*

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale, and advertising departments of THE LANCET should be addressed "To the Manager."

We cannot undertake to return MSS. not used.

Offices: 423, STRAND, LONDON, W.C.

MANAGER'S NOTICES.

VOLUMES AND CASES.

VOLUMES for the first half of the year 1916 are now ready. Bound in cloth, gilt lettered, price 16*s.*, carriage extra.

Cases for binding the half-year's numbers are also ready. Cloth, gilt lettered, price 2*s.*, by post 2*s.* 4*d.*

To be obtained on application to the Manager, accompanied by remittance.

TO SUBSCRIBERS.

WILL Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, London, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will ensure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

THE COLONIAL AND FOREIGN EDITION (printed on thin paper) is published in time to catch the weekly Friday mails to all parts of the world.

ALTERATION OF INLAND SUBSCRIPTION RATES.

OWING to the alteration in the Inland Newspaper Postal rate, the postage on each copy of THE LANCET will in future be 1*d.*, and sometimes 1½*d.*

The revised Inland Subscription rates are:—

One Year	£1 3 3
Six Months	0 13 8
Three Months	0 7 0

The rates for the Colonies and Abroad (thin paper edition) will be as usual:—

One Year	£1 5 0
Six Months	0 14 0
Three Months	0 7 0

Subscriptions (which may commence at any time) are payable in advance. Cheques and Post Office Orders (crossed "London County and Westminster Bank, Covent Garden Branch") should be made payable to the Manager, Mr. CHARLES GOOD, THE LANCET Offices, 423, Strand, London, W.C.

TO COLONIAL AND FOREIGN SUBSCRIBERS.

Subscribers abroad are particularly requested to note the rates of subscriptions given above.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the above rates, whatever be the weight of any of the copies so supplied.

NEWSPAPERS FOR NEUTRAL COUNTRIES.

Newspapers are not at present being sent forward to neutral European countries unless posted direct from the office of publishers or newsagents who have obtained permission from the War Office for this purpose. The Publisher of THE LANCET has obtained the required permission, and he will forward copies direct from the Office to any neutral country on receipt of instructions.

ADVERTISEMENT RATES.

Books and Publications ... ...
Official and General Announcements
Trade and Miscellaneous Advertisements and Situations Vacant ... ... } Five lines and under 4s. 0d

Every additional line, 6d.

Situations Wanted: First 30 words, 2s. 6d.
Per additional 8 words, 6d.

Quarter Page, £1 10s. Half a Page, £2 15s.

Entire Page, £5 5s.

Special terms for Position Pages.

Advertisements (to ensure insertion the same week) should be delivered at the Office not later than Wednesday, accompanied by a remittance.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, Sept. 13th, 1916.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radio in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb	Dry Bulb.	Remarks.
Sept. 7	30·396	N.E.	...	104	70	56	56	57	Cloudy
,, 8	30·320	N.E.	...	100	68	57	57	60	Cloudy
,, 9	30·303	E.	...	87	69	59	60	63	Cloudy
,, 10	30·220	N.E.	...	70	62	57	59	62	Misty
,, 11	30·121	N.E.	...	86	66	55	55	58	Misty
,, 12	29·991	N.	...	75	66	57	57	60	Overcast
,, 13	30·050	W.	...	123	72	59	62	65	Overcast

Communications, Letters, &c., have been received from—

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